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International Assembly—Public Auditorium, Cleveland, Ohio, November 9 to 12, 1948, 33rd Year.

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Cancer: A Biologic Problem

EDWARD L. BORTZ*

UNIVERSITY OF PENNSYLVANIA GRADUATE SCHOOL OF MEDICINE, PHILADELPHIA

Diagnosis and treatment of cancer have progressed to a point of considerable efficiency. If patients suffering from this dread condition could be placed in the hands of qualified surgeons and precision radiologists sufficiently early, approximately 30 per cent of all individuals now suffering from cancer might avoid its ultimate destruction. But, if the present mortality rate continues, it has been reliably estimated that some 185,000 people will die from cancer in 1947.

A few short years ago Stanley P. Reimann demonstrated that on the average a lapse of approximately nine months occurred between the first discovery of an abnormal condition and the resort to adequate measures for eradication. Diagnosis of cancer, particularly internal growths, is notoriously difficult when the lesion is small and localized. But this represents the lesion which, when removed, will result in saving the lives of many patients. Therefore a certain amount of surgery may be performed with negative findings.

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NOTE: Read before the meeting of the Interstate Postgraduate Medical Association of North America, St. Louis, Missouri, October 14 to 17, 1947.

The educational campaign backed by governmental and philanthropic agencies, plus many splendid local groups throughout this nation, should impress the public with the necessity for prompt and effective utilization of the modern methods of diagnosis and treatment available at all well established hospitals.

CANCER AS A BIOLOGIC PROBLEM

Somewhere in the cycle of normal growth the cells lose their organismal controls. They get out of hand, grow wild and become scavengers on the so-called normal tissues adjacent to them. Here resides the heart of the cancer problem. As stated by J. P. Greenstein much is known of the normal state A and the frankly malignant state Z, but the states midway between are not yet identified. Organization of teams of highly qualified experts in various scientific fields must be created to guarantee a sufficiently broad and successful attack on this destructive process.

It is thought by many that the most promising approach to the cancer problem today is not through the study of cancer itself. More basic knowledge in reference to the normal growth of human tissues must be obtained. With the development of radioactive isotopes

and tracer substances new knowledge concerning the intermediary metabolism of carbohydrates, proteins, fats, and the minerals also, should prove valuable in the approach to a better understanding of cancer. A correlation of data received from groups of investigators throughout the world is accelerating the attack on cancer.

THE NATURE OF CANCER

With the gradual recognition that tumor growths are not peculiarities of human beings, an important contribution to scientific knowledge was made. Cancer is not a separate entity. It must be regarded as one of a graded series of neoplasia, cancer being the expression of a single neoplastic principle.

In any carcinogen, the action is on the inside of the cell so that the cell changes its normal pattern of growth. It is important to learn whether the different carcinogens, such as light, chemical compounds, and viruses each produce the same intracellular changes, for they each effect the same result, that is, unorganized continuous growth.

HEREDITARY TRANSMISSION

It is widely known that certain strains of laboratory animals have a predisposition to particular kinds of tumors. Origin through the chromosomes and genes alone is, however, not an infallible rule. In certain kinds of mice in which the tendency to develop mammary gland tumors was transmitted, it was found that when the offspring were immediately removed from a maternal environment at birth and suckled by a different mother, mammary gland cancer did not appear even though predisposed by heredity. The reverse process has been similarly demonstrated by experiment. Intensive investigation of the so-called "milk factor" has suggested that there is a harmless virus occurring in mammary tissue, entering the new host through the gastrointestinal tract, which may turn into a cancer-producing virus when the appropriate cellular environment undergoes pathologic change.

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Rous has emphasized that no virus capable of directly producing a tumor has yet been isolated from tumors of the ordinary laboratory animals. But impressive circumstantial evidence is available. Large papillomas occurring in the tails of certain rabbits are virus induced; these growths may give rise to metastasizing cancers, yet nothing has been obtained from the tumor proper which will produce growths in other individuals. Apparently the tumor-inducing virus is either masked or no longer present in the growth which it has stimulated, but must be isolated during the pre-cancerous series of events.

THE NECESSITY FOR TEAMWORK

As cancer is an abnormality of growth the implication is clear that more knowledge concerning normal growth is necessary. For the last twenty-five years a group of investigators has been studying various significant phases of the growth problem in The Lankenau Hospital Research Institute.

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1. The Department of Tissue-Component Chemistry under the direction of Toennies and associates is exploring chemical changes in tissue composition associated with the transformation of normal into malignant tissue. More particularly this group is investigating differences between the proteins of cancerous and corresponding normal tissue. Among the reasons for this search is the belief that malignant cells may contain special proteins capable of producing specific antibodies against tumors. Isolation of such proteins would have therapeutic significance, aside from having theoretical interest.

Among presently known chemical differences between normal and malignant tissues are quantitative differences in calcium and zinc content and divergences in certain enzyme patterns (e.g. glucuronidase). Characterization of tumor proteins as structurally distinct from the proteins composing normal cells is a problem for future investigation.

2. The Department of Metabolic Chemistry under Medes and her associates is concerned with differences in the metabolism of normal and cancer tissue. For example, a cancer cell may process and utilize a given amount of starch quite differently from the corresponding normal cell. This is suggested by peculiarities in enzyme patterns of malignant tissue. While the end result of a cancerous synthetic process may chemically resemble the end result of the corresponding normal process, the intermediary steps may be quite different. Experiments on the intermediary metabolism of proteins, fats, and carbohydrates are carried out on tissue slices, rats, mice, and plants.

In this work special use is made of the isotopes of carbon (heavy C^{13} and radioactive C^{14}), differing from ordinary carbon by additional neutrons in the atomic nucleus. These isotopes, when incorporated into the framework of an organic molecule, serve as tracers of the intricate reaction-paths followed by the test substance, as it becomes part of living protoplasm. Any peculiarities in cancer metabolism may thus be detected.

3. In the Department of Genetics and Cytochemistry, Schultz and associates are concerned with the chemical structure of the chromosomes which function as the carriers of the hereditary elements or genes in the cell nucleus. How is the chemical structure of certain chromosome regions related to gene activity? The large banded chromosomes in the salivary gland cells of fruitfly larvae, indicative of definite gene patterns, permit mapping of individual gene locations. They make it possible to associate certain enzymes with specific genic effects.

What are the changes especially in nucleoproteins and nucleic acids associated with certain gene mutations? How can mutation be controlled environmentally, by diet or temperature for instance? This question is of obvious importance if the malignant change is considered a "mutation."

Cancer is "hereditary" in some human families, and cancer strains of mice, rats, and even flies have now been developed by selection and inbreeding. The ever-increasing knowledge of a few cancer viruses, such as the milk factor, complicates the picture as to the direct or indirect role of the genes in cancer "heredity." But fundamental study of gene chemistry and gene physiology will contribute much toward a more intimate understanding of viruses, sometimes referred to as "naked genes."

4. In the Department of Chemotherapy and Immunochemistry, Creech and associates are investigating the physiologic properties of bacterial polysaccharides or multiple sugars used in cancer therapy. One of the main aims is improvement of the clinical effectiveness of these preparations by increasing the tumor-destroying activity and by eliminating, or at least reducing, the concomitant toxic properties.

Cytologic studies of the profound cellular changes produced in mouse cancers and human tumors by these substances, by hormones, and by other therapeutic compounds are in progress. Experiments on the immunologic reactions of proteins chemically combined with cancer-producing chemicals are expected to throw some light both on the mechanism of cancer

origin and natural defenses against this malignant process.

5. The Department of Embryology under Briggs and associates is mainly concerned with studies on cell parts and chemical factors which induce differentiation and specialization in maturing embryonic cells. For critical evaluation of the immunologic behavior of normal compared with malignant cells, an experimentally induced muscle tumor is compared with normal muscle obtained from the same inbred strain of mouse.

6. The Department of General Physiology and Tissue Culture headed by White and associates deals with the developmental physiology of plant tumors and with nutritional studies on tissue cultures of both plants and animals. A culture medium in which the chemical formula of every component is known is not yet available for animal cells. Such a medium would be a very potent tool for elucidating growth requirements and metabolic chemistry of both normal and cancer cells.

7. The Department of Physiologic Zoology and Microbiology (Hauschka and associates) is interested in the amino acid aspects of differentiation in the cells of protozoa and simple marine organisms. The mechanisms by which naturally occurring growth inhibitors derived from plants or animals interfere with cell division are also studied.

A special project deals with the effect of trypanosome infections and endotoxins prepared from lysed trypanosome cells on the growth of various mouse cancers. This investigation falls into the category of biotherapy, or therapy by means of substances derived from living organisms. They are for the most part chemically obscure. Leads in biotherapy other than the trypanosome endotoxins are also to be investigated.

8. The Department of Pathology (Donnelly and associates) investigates the tissue changes produced in animals which have been given certain chemotherapeutic agents. The results of these studies serve to guide in some degree the use of such agents against human tumors.

In addition this department is testing the inhibiting effects of certain chemicals used with carcinogens of similar chemical structure. Some non-carcinogenic inhibitors apparently block their carcinogenic chemical relatives. Such studies may add clues to the enigma of cancer production and may, in the future, be important in cancer prevention if naturally occurring carcinogens are discovered.

Close liaison exists between these eight departments and many of the research problems require full time collaboration between specialists in the various groups.

THE concept that all tumors are autonomous growths and that their cells are anarchic has resulted in much loss of time and effort in the field of cancer research according to Peyton Rous. Observations of the effect of male sex hormones on prostatic cancer have helped to dispel this idea as a generalization. The dependence of certain tumors upon hormonal influence indicates that the change of a normal cell to a tumor cell does not necessarily mean that a gross tumor will result. Cancer cells do not fail to develop all of the normal physiologic characteristics.

As another demonstration, when the action of the carcinogenic agent is withdrawn a few skin tumors, presumably due to these agents, disappear spontaneously. When the caloric intake is reduced in laboratory animals, fewer tumors appear and they are slower in developing; once there is fresh exposure to the irritant, the growth speeds up if the caloric intake is again raised. Tumor incidence and time of appearance may also be modified upward or downward by altering the proportions of proteins, carbohydrates, and lipoids in a diet uniform in calories. For example, high fats increase tumor incidence.

CANCER AND CHRONIC TISSUE DISTURBANCE

It has long been known that cancer tends to arise where chronic tissue disturbance exists. But an additional special factor is essential to produce the actual neoplastic change. It has been observed that this change, in response to a carcino-

genic agent, may develop when the tissue is in a state of hyperplasia. This state may be due to injury and the carcinogenic agent acts through the altered cellular activities which the injury has produced.

Rous has emphasized that transplanted tumors grow when carcinogenic agents are injected, and when operable human skin cancers are painted with a powerful carcinogen they disappear at least for a time. Attempts are therefore being made to synthesize hydrocarbons closely similar to those which are carcinogenic with the hope of checking already established tumors. Only moderate success in this connection has been attained in the treatment of leukemias and lymphomas with the highly toxic nitrogen mustards which retard cellular activity.

SOME PROMISING LEADS

Chemists in England, who identified the chemicals which were capable of producing cancerous growths in experimental animals, started an extremely important approach. These substances are now in process of being synthesized; stilbene compounds studies by Dodds may be cited. Urethane in the treatment of leukemia has been studied by Haddow and his colleagues. More recently, groups of workers in the United States have carried on observations in this field.

In the field of chemotherapy the effect of the nitrogen mustards is superficially similar to that of x-rays and radium, as in the case of certain lymphoid tumors such as Hodgkin's disease. No cures have been reported.

Podophyllin—obtained from the roots of the mandrake plant, has a selective action on tumors cultured in eggs without destroying the embryo. In full grown young chicks with the Rous Sarcoma, hemorrhage and necrosis, and also a severe toxic effect on the Purkinje cells in the cerebellum have been produced. The same effect has been observed in mouse tumors, but in mice the Purkinje cells were apparently *not* damaged.

Polysaccharides—Working in the Institute for Cancer Research, Creech sensitized rabbits to Shear's polysaccharide. Then he utilized the gammaglobulin fraction of the serum to protect other animals. P-3 was first used, but now a less toxic derivative P-5 is being studied. This purified P-5 is obtained from filtrates of cultures of B-prodigiosus. Studies with P-5 have shown it to be antigenic. Probably some immunologic or drug tolerance action may be responsible for the relative ineffectiveness of second, third, and fourth injections compared with that of the initial injection.

Since the first of the year, some forty patients with various types of malignancy have undergone experimentation with the P-5 polysaccharide. Routine serologic, cytologic, and blood chemistry studies have been conducted; biopsies have been made before and at various intervals after the administration of the polysaccharide. Amounts of polysaccharide varying from 40 to 400 micrograms were administered.

With this preparation of polysaccharide the toxic reactions have been moderately severe but controllable. To the best of our knowledge, the toxic symptoms have been transient and no irreversible damage has been caused. Hodgkin's disease, lymphosarcoma, and a few other sarcomas have responded reasonably well to the polysaccharide therapy. Carcinomas do not respond particularly well to the material. Cytologic studies made before and after P-5 administration have proved that human tumors are definitely affected deleteriously.

In some cases, x-ray studies have revealed temporary regressions of metastatic tumors in the lungs. The regressions have neither been complete nor constant but the observation of definite chemotherapeutic response is encouraging.

K.R.—This preparation is a lysate from the cells of *Trypanosoma cruzi*. It is bacteria-free. When injected subcutaneously at points distant from the tumor it produces hemorrhage and necrosis of various tumors in mice. The Russians have claimed results in the treatment of adenocarcinoma of the breast, carcinoma of larynx, rectum, and cervix. Hauschka, the American authority, is of the opinion that it will probably not be of great practical use.

Urethane—This chemical substance has been

used by the British and some results have been claimed in the treatment of lymphoid tumors. Practically, it has been a disappointment.

Folic acid—Lewison has described some observations with the use of folic acid. Spontaneous regression of certain kinds of tumors in mice has been noted following the use of folic acid. The action of the folic acid appears to be due to the glutamic acid in the molecule. It has been tried on a few patients with interesting results and further investigation is warranted.

Significant developments should appear in the near future relative to the study of enzyme action, the interrelationships of the viruses, and the investigation of endocrine influences. Steroid metabolism needs much clarification. Further experimental work with bacterial products which may be cancerolytic offers some promise. The possibility of transmission genetically is certainly plausible. More and more work is being done on the mechanism of mutations of the various genes.

THERE is a hopeful and expectant air in the realm of cancer research at the present time. Increasing support from the public and governmental agencies and the recent generous release of radioactive isotopes, are drawing the attention of more qualified investigators to this field.

Recent studies with both male and female sex hormones reveal definite evidence of an alterative effect on certain types of cancer in human beings. The work of Huggins, which definitely demonstrated a retardation in the spread of prostate gland cancer in a large number of cases, is an important contribution. It has been said that removal of the chief source of the male hormone from the body, the testicles, eliminates a stimulating effect on the new growth. However, it really works on the differentiating phase of cell growth. More recently, with the use of the female sex hormones, diethylstilbestrol or ethinyl estradiol, castration has not been necessary.

Breast cancers have been reduced by use of hormones antagonistic to the female sex hormones, as demonstrated by Heiman of Columbia. It has been known that cancer of the breast in males may yield to castration or to use of stilbestrol. Furthermore, Adair and others have shown that testosterone may exhibit a beneficial effect on metastases to bone from carcinoma of the breast. Much light should be thrown on this field in the near future.

CLINICAL PHASE OF CANCER PROBLEM

As cancer is the second most common cause of death, exceeded only by diseases of the vascular system, the medical profession needs to be constantly alert in the battle for cancer control. Quite a few doctors themselves have been the victims. Russell Carman, the Mayo Clinic roentgenologist, diagnosed his own case when it was inoperable, but he had recognized the symptoms. The beloved Francis W. Peabody of Boston fame spotted his lesion in the transverse colon. The brilliant Scot, D. P. D. Wilkie, an authority on gastric cancer, later died from this lesion because it was diagnosed too late. The watchword for cancer control today, on the clinical side, is "early diagnosis."

Wangensteen recognized that individuals who fear cancer should be examined three or four times yearly. It should be added that the investigations by the examining physicians should be sufficiently painstaking and thorough to give the patient peace of mind.

It is unfortunate that there are no cardinal specific symptoms which move the patient into the hands of a surgeon sufficiently early for curative measures to be applied. The tragic story in too many cancer patients is "Delay; delay in onset of symptoms, delay in the patient's seeking the physician's advice, delay of the physician in making proper studies, delay in consultation, delay in following recommendations."

To reduce the mortality in cancer of the stomach would require the following procedures according to Engel:

1. Screening groups by x-ray.
2. Annual checkup should include gastric x-ray.
3. Education of lay groups for gastric symptoms.
4. Gastric x-ray on any patient complaining of

fatigue with loss of appetite and certainly if this is associated with indigestion.

5. Gastroscopic examination, fractional test meal, blood count, and serum protein are aids in diagnosis.

6. Any patient with gastric lesion may be treated for four weeks, after which x-ray examination should be repeated.

7. Operation done on any case diagnosed gastric ulcer in whom after four weeks medical treatment the x-ray shows a persistent lesion even though the patient is asymptomatic.

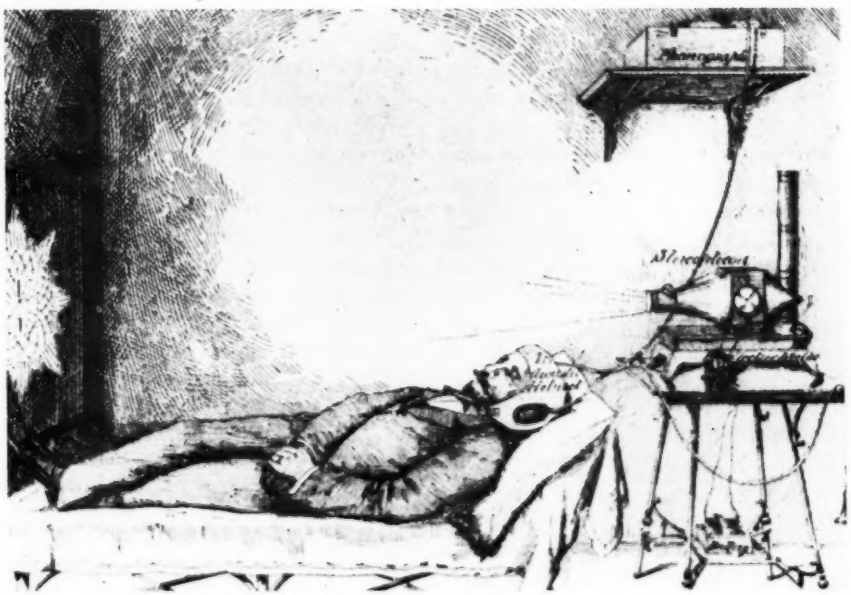
8. Operate any patient in whom x-ray shows gastric carcinoma or in whom gastroscopy gives evidence of gastric carcinoma.

9. Operation must be sufficiently extensive.

"Faint heart never cured a cancer patient" (Reimann).

SUMMARY

Cancer is a biologic problem, essentially a problem of growth, being a deviation from the normal. Therefore the most promising attack on the cancer problem today will not be along clinical lines, but through investigations of basic biologic processes having to do with the chemistry and physics of normal and abnormal cellular metabolism. Organization of teams of basic scientists, collaborating with each other on a world-wide basis, represents the most promising approach to the solution of the cancer problem.



MUSICAL THERAPY

Dr. Corning's method of treatment with musical vibrations and moving slides (1899). "The subject is placed upon a low divan and acoustic hood is applied. The harmonic vibrations shown in connection with a series of colored slides "of enchanting beauty" are created in an Edison phonograph. With the use of the apparatus depressive ideas lose their ability to engender the person and new somberness will result."

From: The Bettmann Archive

Gastric Vagotomy in Peptic Ulcer

EDWARD H. CAMP* AND LESTER R. DRAGSTEDT

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PATHOGENESIS OF GASTRODUODENAL ULCER AND THE RATIONALE FOR VAGOTOMY

THE OPERATION of vagus nerve section was developed in this clinic by Dr. Lester Dragstedt because of the mass of experimental and clinical data supporting the acid theory of the genesis of gastroduodenal ulcer and the great importance of the psychic phase of gastric secretion.

Pure gastric juice as secreted by the fundus of the stomach has the capacity to destroy and digest living tissue, even the stomach itself; that it does not do so under normal conditions is dependent on the fact that the ingestion of food is the usual and appropriate stimulus to gastric secretion, and the food thus ingested dilutes and neutralizes the juice and reduces its corrosive action. In normal man the quantity and acidity of the gastric secretion is reduced to such an extent in the interval between meals that the acidity can be almost totally neutralized by the saliva, regurgitated duodenal secretions, and small residuals of food. Also, during the twelve-hour period at night, when the individual is normally resting, gastric secretions seldom exceed 500 cc. in volume and usually have little or no free acid.

In patients with gastroduodenal ulcer the chief secretory abnormality lies in the secretion of abnormally large amounts of gastric juice in the intervals between meals and particularly at night when the stomach is empty and there is no obvious secretory stimulus. The data obtained from experimental work and clinical observations indicate that this hypersecretion, with its total acidity far in excess of that normally found, is neurogenic in origin and can be successfully reduced, and thus promote healing of the ulceration, by severance of the vagus nerves in the lower mediastinum.

PREOPERATIVE AND POSTOPERATIVE MANAGEMENT

Preoperative secretory studies are necessary to the proper evaluation of each case and also to assist in the interpretation of clinical results postoperatively. The routine followed on our hospital service is usually as follows: Two days before the contemplated date of operation, the patient is placed on a clear liquid diet, and on that evening a Levine tube is introduced into the stomach, the contents of which are emptied, using lavage if necessary. The tube is then left in place for a period of twelve hours, connect-

*Assistant Resident in Surgery on the Service of Dr. Dragstedt.

ed to a continuous Wangensteen suction, and the patient is not allowed any food or drink by mouth.

At the completion of this period, the following morning (day before operation) an insulin test is performed while the tube is still in place. This test depends upon the fact that hypoglycemia induced by an adequate dose of insulin stimulates the vagus secretory fibers to the stomach, probably by a central effect. The injection of 20 units of crystalline insulin usually causes a fall in blood sugar to 40 mg. per cent or less, and in thirty to sixty minutes a marked augmentation in the rate and acidity of the gastric secretion occurs. If all vagus fibers are divided, no secretory response is observed. Blood samples are drawn at the initial fasting time prior to the injection of the 20 units of crystalline insulin intravenously and again one hour after the administration of the insulin; if the blood sugar level does not fall to 50 mg. per cent or less, no vagal stimulation is produced.

Following the insulin test the Levine tube is withdrawn, and clear liquid diet is resumed. That evening (night before operation) the Levine tube is reinserted and a second period of twelve-hour gastric secretion obtained. Thus, the patient comes to the operating table the morning of operation with an empty stomach and a Levine tube in place.

Postoperatively, continuous Wangensteen suction is maintained for three to four days, although the patient is allowed to be out of bed. The day of withdrawal of the tube is a day of total abstinence from food, and it is only on the succeeding day (the fifth or sixth day) that 30 cc. of clear liquids every hour are given. Should no abdominal distress, nausea, distention, or heavy epigastric sensation ensue, this amount is doubled on the following day and a clear liquid diet *ad lib* is then permitted on the seventh or eighth day. If any of the above complaints occur, the stomach is emptied by a Levine tube, and the feedings are stopped for the remainder of the day; on the next day the program begins again one step back from that at which the symptoms arose. This program of gastric decompression and very gradual resumption of food intake is a most essential part in the treatment of these patients, and prevents many of the complications occurring with an atonic, flaccid, overloaded stomach.

EDWARD H. CAMP

When the patient has progressed to a full liquid diet postoperatively (the seventh or eighth day), two successive nights of twelve-hour gastric secretion plus a postoperative insulin test are again performed as before. The patient is then placed on a soft diet (tenth day) and discharged the following day. The physiology of his vagotomized stomach as compared to the normal stomach is explained to him simply, and he is cautioned to avoid overeating for a period of 4 to 6 months. No specific foods are to be avoided, but foods which have a tendency toward production of considerable amounts of gas (cucumbers, beer, fresh fruits and fruit juices, watermelon, cantaloupe, etc.) should not be consumed in large quantities, and care should also be taken to eat slow-

ly and thus avoid swallowing large amounts of air during meals.

LESTER R. DRAGSTEDT

TECHNIC OF VAGOTOMY

Section of the vagus nerves was formerly done by a transthoracic approach since it was considered that only in this manner could the vagus trunks be severed before extensive division and subdivision of them had occurred. However, the increased morbidity incident to a transthoracic procedure, together with the postoperative pain, the inability to actually visualize the lesion itself, and, lastly, the necessity for a second operation to perform a gastroenterostomy, if needed, led to the development of an abdominal approach to the vagus trunks. It is important to realize that the actual division of the trunks occurs at the same level by the present transabdominal route as by the former transthoracic approach; both actually occur supradiaphragmatically.

The technic now used is as follows. Under continuous spinal anesthesia, when possible, and with a Levine tube passed into the stomach, an incision is made in the midline from the xiphoid process to the left of and below the umbilicus for a distance of 2 to 3 cm. Entering the abdomen, a very thorough exploration is made for evidence of additional diseases, and detailed inspection and palpation of the stomach and duodenum is made with the following points in mind. (1) Is there evidence of active ulceration? (2) Is there any evidence of malignancy in the stomach? (3) Is there an adequate pyloric canal or is obstruction present or impending? This last point may settle the question of the necessity of a gastroenterostomy, for only with clinical, roentgenographic, or anatomic evidence of obstruction is a gastroenterostomy done.

When these preliminary observations have been made, a laparotomy pad is placed in the splenic region to assist in blocking off the omentum and small bowel from the field. The operator, with his right hand, then gently draws the left lobe of the liver downward and to the right, exposing the left triangular ligament of the liver and putting it on stretch. This is then severed with scissors close to the liver by the assistant, freeing the liver back to the reflection of the ligament onto the diaphragm. The freed left lobe is then folded and retracted to the right by a cloth-covered spring retractor. With his left hand, the assistant then exerts traction on the stomach, and the operator identifies the esophagus by the inlying tube and, picking up the peritoneum over the abdominal esophagus at the diaphragm with a thumb forceps, incises it with scissors. He spreads the opening sufficiently to expose the esophagus beneath and then introduces his right index finger, which is gently used to free the distal thoracic esophagus over a distance of about 4 inches. During this portion of the procedure it is most important to allow the vagi to remain associated with the esophagus, a point that is especially important with reference to the right or posterior vagus which ordinarily is near the esoph-

agus and not in the *close* proximity customarily noted with the left or anterior vagus.

After the esophagus and its vagi have been mobilized, the former can be delivered into the peritoneal cavity and visualized. The nerve trunks themselves are most readily detected, however, by their tenseness compared with the elastic feel of the esophagus. Using the right index and middle finger behind the esophagus, the operator can then free the right vagus from the esophagus and deliver it to the left, thus exposing it to view over a distance of 3 to 4 inches. A clamp is then placed on the nerve as far proximal as is convenient, and the assistant ties a ligature of linen (or silk) above the clamp. The ligature is cut and then the nerve; it is done in that sequence in order to prevent the ligature from slipping off the nerve stump as it might if the process were reversed. The nerve stump is tied in order to delay or prevent regeneration of the fibers. A second clamp is placed on the distal nerve end as low as possible, and the nerve segment excised above this clamp. This nerve stump is similarly ligated with linen (or silk). The anterior (left) vagus trunk is next identified on the anterior surface of the esophagus and closely adherent to it. This is elevated and dissected free by finger dissection, and then treated as described for the right vagus, excising a similar segment.

A thorough examination is then made of the mobilized esophagus for any residual nerve fibers that may remain, for the success of the procedure is dependent on the ablation of *all* vagus fibers. Palpation, inspection, and traction on the esophagus to note the "wirelike" feel of residual fibers are the methods used, and, if any residual fibers are found, they are simply severed between ligatures. The esophagus is then allowed to return to its bed, and the incised peritoneum is closed by interrupted chromic catgut sutures. No attempt is made to repair the left triangular ligament of the liver, but the left lobe is unfolded to occupy its normal position. Should a gastroenterostomy be necessary, it is performed following vagotomy.

RESULTS

The operation described above, or its transthoracic counterpart, has been done by Dr. Dragstedt and his associates since 1943 in 205 cases, with and without gastroenterostomy. Prompt healing of the ulcer, immediate relief from ulcer distress, decrease in gastric night secretion, and negative insulin tests were present and have persisted in 90 per cent of these cases; these results have been far better than those of any other surgical method of treating gastroduodenal ulcer. Approximately 10 per cent of patients have had incomplete vagus sections, as determined by insulin hypoglycemia secretory response and by the twelve-hour night secretion studies before and after operation; only 7 of these cases have recurrent symptoms thus far. More important, though, is the fact that persistence or recurrence of ulcers has occurred only in those of this group who had incomplete vagus sections.

Undesirable side effects of the vagus section do occur but have been found to be of a transient nature, lasting from a few weeks to as long as nine months in some cases. These have consisted of excessive eructation of foul gas and delayed gastric emptying in some patients who did not have a gastroenterostomy. These symptoms may be sufficiently severe to warrant reoperation to establish a gastroenterostomy, but, if the postoperative management course and instruction of the patient is followed and the patient cooperates, this complication can almost always be avoided. Delayed emptying is considered to result from the decreased tonus motility and of the stomach, increased tonus of the pylorus, and occasionally from scar tissue contracture when the ulcer is in the process of healing.

Episodic diarrhea has been another side effect occurring in about one-third of the patients; returning to a liquid diet temporarily, use of paregoric, and the administration of sulfasuxidine have all been helpful in relieving this complaint. The cholinergic drug, urocholine, has been used also in this connection and seems

to hold some promise in this regard, although a definite policy regarding its use has not yet been established.

There have been two deaths among these patients, one due to bronchopneumonia alone and the second due to massive recurring gastric hemorrhages with an aspiration bronchopneumonia in an elderly man who had both duodenal and gastric ulcers and also a history of gastric hemorrhages. Vagotomy and gastroenterostomy effected the desired result in reducing the gastric acidity and secretion and in promoting ulcer healing in this patient, but arteriosclerosis of the vessels in the gastric ulcer prevented adequate thrombosis, and exsanguinating hemorrhages occurred postoperatively, necessitating a second operation to ligate the bleeding vessel. This experience has led us to adopt the policy of ligating the vessel in all cases of actively bleeding ulcers, when severe, in people of advanced years or with marked arteriosclerosis.

CONCLUSIONS

1. Hypersecretion of acid gastric juice during periods of rest as well as activity characterize the patient with gastroduodenal ulcer.

2. Vagotomy reduces gastric secretion by effecting the abolishment of the nervous phase of gastric secretion.

3. Preoperative and postoperative managements form a most important part of the successful care of these patients.

4. Operative technic must be directed to interrupt *all* vagus fibers to the stomach.

5. Ninety per cent of patients had excellent results with prompt healing of the ulcer and had immediate relief from ulcer distress which did not recur; recurrences or failure of the ulcer to heal occurred in only 7 cases, all of whom had undergone incomplete vagotomies.

6. Side effects of vagotomy—diarrhea, delayed gastric emptying, foul eructation of gas—do occur but are transient in nature.

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ANTI-RH SERUM INHIBITOR

That investigator will have made an important contribution to obstetrics, who provides a means of desensitizing Rh sensitive mothers, or of preventing their sensitization. The investigations of Carter are aimed in that direction.

This worker separated from group O, Rh positive cells a lipid fraction which, although nonantigenic in itself, is antigenic in experimental animals when inoculated simultaneously with a protein carrier. It specifically inhibits the agglutinins present in anti-Rh serum. Further reports of this work will be followed with interest.

Diagnosis and Treatment of Cardiospasm

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THE esophagus is frequently overlooked as the site of disease, and symptoms caused by lesions in this organ are often attributed to other thoracic or abdominal abnormalities. The esophageal lesion that most frequently escapes detection is cardiospasm; yet this condition is the most common cause for dysphagia in women and is the second most common cause in men.

The term cardiospasm has not gained universal acceptance, although no other title for the condition has attained comparable popularity. Other descriptive terms have been: achalasia of the cardia, phrenospasm, diffuse dilatation of the esophagus without organic stenosis, and esophagospasm.

Although controversy exists in reference to its terminology, the disease is a concise clinical entity with definite, but not completely understood, anatomic abnormalities. In advanced cases there is obstruction at the cardia, with more or less dilatation of the esophagus above the point of stenosis, and the esophagus may be definitely elongated and angulated (Figures 1 and 2).

Certain areas of the wall of the esophagus may be greatly thinned, especially in the upper portion, whereas other areas may have decided thickening of the muscular coats. The condition of the mucous membrane is dependent on the degree of obstruction at the cardia and varies from minor inflammatory changes to extensive ulceration covered with a grayish colored exudate (Figure 3).

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ETIOLOGY

The etiology of cardiospasm is not known, but the most likely cause is degenerative change in the vagal nerve fibers that enervate the esophagus. Recent observations of the stomach, following section of the vagal nerve supply in treatment for peptic ulcer, show a striking similarity of altered function to that occurring in cardiospasm. Great dilatation of the stomach with prolonged retention of food resembles the condition of the esophagus in advanced stages of cardiospasm.

In postmortem studies degenerative changes have been observed in the vagal nerve fibers in the esophagus of patients who have suffered from cardiospasm, but the question of whether or not these changes were present before death has not been determined.

Males are more often affected than females, in the ratio of 3:2. The disease occurs with the

same frequency in Negro and white patients, in accordance with comparative density of population of the two races.

Cardiospasm is not a neurosis, and patients with the disease have as much, or more, emotional stability than those affected by other organic lesions. It may begin at any age, but I believe that the cases reported in newborn infants are manifestations of an undeveloped nervous system. Experience in treating patients with true cardiospasm would suggest that the measures employed in treatment for so-called cardiospasm in the newborn would be ineffective unless the condition were a temporary disturbance in the nerve supply of the esophagus.

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SYMPTOMS

Symptoms of cardiospasm may begin abruptly, but usually are insidious in onset and consist of epigastric pain, dysphagia, regurgitation of food, and various pulmonary manifestations.

Pain may be the initial symptom and may antedate dysphagia by many months or years. The pain may be an annoying epigastric discomfort or, on the other hand, it may be so very severe that gallstone colic or disease of the coronary artery of the heart may be suspected or diagnosed. There may be little relationship to the time of eating or the type of food ingested. Frequently the patient awakens at night with severe epigastric pain that radiates substernally into the neck, the lower jaw, and into or behind the ears. The pain is often intermittent and usually "colicky" in nature.

Hypodermic injections of morphine may be required for relief of symptoms, but sipping hot water often causes cessation of the severe distress. Habit-forming drugs should not be administered for relief of pain because it always recurs in varying intensity unless relieved by stretching of the cardia. As the esophagus becomes more dilated and dysphagia increases, the pain frequently diminishes in severity.

Dysphagia may begin suddenly or it may come on gradually with a feeling of distress at the cardia while eating. Cold liquids, particularly carbonated beverages, may cause the initial difficulty. The sensation of obstruction is usually located at the cardia, but often the patient believes that food sticks in the upper portion of the esophagus. In most instances any type of food or fluid causes a sensation of obstruction, but raw apples, popcorn, and cold drinks give the greatest amount of trouble.

Dysphagia may be intermittent in the early stages of the disease but soon becomes continuous, although the degree of severity may vary from day to day. Emotional stress or eating in public dining rooms may increase dysphagia. Complete obstruction to passage of food into the stomach for a day or more is not unusual, and one of my patients had had complete continuous obstruction for eighteen years.

Regurgitation may occur immediately following ingestion of food or may be delayed for an indefinite time, depending on the amount of dilatation of the esophagus above the point of obstruction. Occasionally the esophagus dilates so greatly that as much as a quart or more of material may be retained for a long time.

When food is retained in the esophagus for a long time, fermentation occurs and the breath becomes offensive. Continuous retention of large quantities of food in the esophagus causes frequent nocturnal regurgitation, with resulting aspiration and strangulation during sleep. The patient may not actually awaken but may find evidence of regurgitated material on his pillow, or other members of the household may note his coughing or strangulation while he is asleep. Sometimes, if the mucous membrane of the esophagus is ulcerated very much, blood may be present in the regurgitated material.

As a result of regurgitation and aspiration of material from the esophagus, pulmonary suppuration becomes a frequent complication. Pulmonary abscess or bronchiectasis often follows repeated episodes of vomiting and strangulation. At times, pressure from a dilated esophagus filled with food may cause considerable respiratory distress.

Sudden death of patients with cardiospasm has been reported, evidently as the result of a vagus reflex.

Figure 1. Postmortem specimen of cardiospasm with marked obstruction at cardia and death from starvation.

EXAMINATION AND DIAGNOSIS

Physical examination rarely reveals any diagnostic data in cardiospasm. When symptoms have been prolonged and severe, inanition may be present. Several of my patients lost more than a hundred pounds in weight. A 9-year-old girl, who had had symptoms for three years, weighed 25 pounds. Acute starvation may be associated with mental disturbance, and at times acute psychosis prevents cooperation and satisfactory treatment.

Laboratory studies made during a period of starvation and dehydration are not only valueless in diagnosis but may be misleading. Concentration of cellular elements of the blood may mask anemia, and diabetes may be overlooked because of the limited intake of food.

Roentgenoscopic examination is valuable in diagnosing cardiospasm but should be deferred when dysphagia is severe. When obstruction to food is pronounced, ingestion of barium may cause complete occlusion of the cardia and increase difficulty of treatment. If dysphagia is not acute, a roentgenoscopic study should be made, and other studies of the esophagus should be made also.

In a typical case of cardiospasm there is smooth obstruction at the cardia with decrease in peristalsis in a moderately dilated esophagus. In other instances the esophagus may be greatly dilated and distinctly elongated and angulated. Particles of food impacted at the cardia

Figure 2. Marked dilatation and angulation of esophagus in advanced cardiospasm.

may cause sufficient deformity to suggest the presence of carcinomatous obstruction.

Esophagoscopic examination is unusually difficult and trying to the patient who has cardiospasm and should be omitted unless diagnosis is doubtful or unless complete obstruction at the cardia requires direct inspection for a decision on treatment.

A patient who has typical symptoms and roentgenoscopic evidence of cardiospasm should be instructed to swallow 5 yards of size D twisted silk thread during a period of twenty-four hours. Sounds should then be passed over the guiding thread into the stomach. In cardiospasm very slight elastic resistance is encountered at the cardia, and a size 60 French sound can be passed with ease. This procedure is much more valuable than oral endoscopic study in distinguishing spasm from organic obstruction at the cardia.

Differential Diagnosis—Cardiospasm must be differentiated from a partially thoracic stomach with shortening of the esophagus, para-esophageal diaphragmatic hernia, carcinoma of the stomach and the lower portion of the esophagus, benign stricture at the cardia, diverticulum of the lower portion of the esophagus or cardiac end of the stomach, and disease of the gallbladder and of the coronary artery of the heart.

Intermittent spasm at the cardia may suggest early cardiospasm, and differentiation may be impossible without prolonged observation. Intermittent spasm is frequently associated with obscure intra-abdominal lesions, whereas in

cardiospasm an associated lesion within the abdomen is usually coincidental.

Diffuse spasm of the esophagus resembles cardiospasm in symptomatology, but roentgenoscopic study is usually sufficient for diagnosis. In diffuse spasm the lower half or lower two-thirds of the esophagus is spastic; complete symptomatic obstruction often occurs (Figure 4) in such cases.

Figure 3. Appearance of mucus membrane of esophagus in cardiospasm.

TREATMENT

Many drugs have been employed in treatment of patients with cardiospasm but none have proved satisfactory. Tincture of belladonna and atropine occasionally cause reduction in severity of dysphagia but more frequently are ineffective in diminishing symptoms. One of my patients obtained temporary relief from dysphagia by hypodermic injections of atropine. The dosage of the drug had been gradually increased until he tolerated ¼ gr. at a time. After the effect of the atropine had subsided, esophageal closure was complete until the medication was administered again. The majority of so-called antispasmodic drugs are worthless in treatment.

For many years various surgical procedures have been attempted in an effort to relieve symptoms of cardiospasm, but until recently the risk of operation was formidable and the results disappointing. Since the advent of sulfa drugs and antibiotics and with improvement in surgical technic, operations are performed much more frequently than previously. Although plastic operations at the cardia can be done with expectation of a reasonably low mortality, the risk remains important and functional results are unsatisfactory. Sympathectomy has been done with indifferent results for patients suffering from cardiospasm.

Dilation of the cardia with large sounds or with some type of expanding dilator provides the greatest amount of relief with the smallest degree of risk, discomfort, and incapacity.

Passage of a sound, size 60 French, over a previously swallowed guiding silk thread, through the cardia affords complete temporary relief from all symptoms in approximately 10 per cent of all patients with cardiospasm, and half of these remain well. Almost all patients are partially relieved from symptoms by this procedure. If complete relief is not gained by passage of sounds, or if symptoms recur after this degree of dilation, the cardia should be stretched with a hydrostatic dilator. When a guiding thread is used for introduction of the dilator, the cardia can almost invariably be stretched with relief from symptoms.

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Figure 4. Diffuse spasm of lower half of esophagus with complete symptomatic obstruction.

Risk and discomfort of dilation are negligible, and more than 75 per cent of the patients so treated remain well permanently. When symptoms recur, they are mild, and further dilation ordinarily suffices to give lasting relief. Hydrostatic dilation should be done only when relief is not obtained by passing a size 60 French sound through the cardia.

Occasionally cramping epigastric pain persists after dysphagia is relieved by dilation, but further stretching of the cardia usually relieves this residual discomfort. Pain after dilation may be sufficiently severe to require hypodermic injection of morphine for relief.

During the past twenty-four years I have not had a fatality following dilation of the cardia for cardiospasm.

Chronic Vascular Headache

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CHRONIC, recurrent headache is a frequent complaint in medical practice. The patient suffering with chronic headache usually makes the rounds from one physician to another seeking relief from a condition which seriously interferes with his health and ability to work. He usually receives numerous and varied forms of treatment, the results of which are frequently disappointing.

The problem which these patients offer is first, diagnostic, and second, therapeutic. The diagnostic problem involves a knowledge of the multiple causes of chronic headache and their differential diagnosis. Some of these causes are: (1) chronic infection, (2) intracranial tumors, (3) hypoglycemia, (4) disease of the cervical spine, (5) myositis and fibrositis, (6) chronic suppurative sinusitis, (7) constipation, (8) cranial trauma, (9) eye strain, (10) psychosomatic disturbances, (11) vascular disturbances producing what has been designated as chronic vascular headache. This group includes the following: (1) migraine, (2) allergic headaches, (3) histamine cephalgia (Horton), (4) headache associated with nasal allergy, (5) myalgia of the head (Williams), (6) temporal arteritis, (7) headache due to hypertension.

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This paper is concerned particularly with the first five types of chronic vascular headache because they have certain common characteristics —namely, possible allergic etiology, a histamine factor, and a reversible mechanism. The last two will be mentioned in passing, since they are in reality due to inflammatory and degenerative lesions of the blood vessels.

Patients complaining of chronic headache must be studied from a general medical point of view. A complete history is necessary and the patient should have a careful examination and such laboratory investigations as urine, blood count, serology, blood chemistry, and roentgenograms of the skull.

Special examinations include ophthalmologic, neurologic, encephalographic, rhinologic, and dental examinations. If the patient presents any suspicion of allergy, a complete allergic survey is indicated. An attempt will be made to review the pathogenesis, diagnosis, and management of each type of headache.

MIGRAINE

Clinical Manifestations—Migraine may develop early in life, even during childhood. The headaches are familial, paroxysmal, and preceded by an aura and scotomata; in female

patients they are associated with the menstrual cycle. As a rule, there is freedom from attacks in the early part of pregnancy, and in many instances the headache disappears after the onset of menopause.

The involvement is unilateral (hemicrania), following the vascular distribution of branches of the external carotid artery. The pain is deep, dull, continuous, and aching, and is associated with photophobia, nausea and vomiting. The patient cannot tolerate noise or the sight, smell or even the thought of food. For this reason he may lock himself up in a quiet dark room and remain there lying down until he feels better. The headache may last from a few hours to twenty-four hours. In many instances, it is associated with polyuria, vertigo, sweating, chilliness, and cold extremities. As a result of reflex vascular involvement there appears spasm and tenderness of the muscles of the scalp and neck.

The patient has a characteristic migraine personality. He is high strung and is as a rule emotionally unstable. He reacts profoundly to his environmental problems. He takes responsibilities seriously and worries and frets over everything. The headaches are invariably brought on by emotional crisis, excitement, periods of stress and indecision, feeling of hostility, and by the strain of an active, crowded manner of living.

Pathogenesis—The mechanism of migraine has been thoroughly investigated by many workers, notably by Wolff, Schumacker, Atkinson, Goltman, and others.

LEO H. CRIEP

THEORIES which have been offered in this connection explain only some of the observed features. It is probable that the pain of migraine is due to traction, inflammation, pulsation, dilatation and distention of the extracranial arteries, possibly to some involvement of the venous sinuses and even to the nerves in the head. For this reason, migraine is referred to as vasodilating or "red" migraine. A small number of such headaches are on a vasospastic basis and are referred to as "white" migraine.

In some instances, increased capillary dilatation and permeability leads to edema of the brain. The question arises, what is it that produces this reversible arterial involvement? Also, why is this involvement as a rule unilateral? Is this mechanism similar to that involving the capillaries and arterioles of the skin and mucous membranes in hay fever, asthma, and urticaria following the liberation of an H-like substance? Or is this disturbance due to an imbalance of the sympathetic-parasympathetic nervous or endocrine systems? These same questions come up when one considers the mechanism of types of chronic vascular headache other than migraine. The explanations which have been advanced are not always supported by clear cut experimental evidence; and yet, sufficient investigation has been carried out to make such a discussion profitable.

It is entirely possible that at least in some instances of migraine—particularly in those due to allergy—histamine or a histamine-like substance is responsible for the dilating effect on extracranial arteries. Fatigue, exhaustion, and emotional upheavals contribute to the atony of

the arterial wall rendering such vasodilatation easier. Various sets of arteries may be involved under different circumstances, giving rise to characteristic clinical pictures.

In migraine the branches of the external carotid artery (the supraorbital, temporal, frontal, post-auricular, and occipital arteries) are involved. Even in the same individual, histamine may have a preferential action on some arteries and not on others. It is well known that the dilating arterial effect produced by histamine does not occur in all blood vessels. Thus the administration of histamine produces dilatation of the blood vessels of the skin of the shoulder, neck and face, with characteristic flushing, but in the same patient there is constriction of the vessels of the legs, arms, and splanchnic area. We do not know the reason for this difference in histamine action, nor can we explain the mechanism of "white" or vasospastic migraine on the same basis. Nor is there any demonstrable dilatation of the retinal vessels in migraine, although we have observed occasional vasospasm. This is to be expected since the ophthalmic artery is a branch of the internal carotid which, as was stated above, is not involved in migraine.

Treatment—Since the treatment of migraine includes certain general principles which are equally applicable to other types of chronic vascular headache, these will be stated at this time and will not be repeated later.

Coexisting pathology such as anemia, gastrointestinal disturbances, foci of infection, etc., are adequately treated. A knowledge of the patient's life pattern and reaction to his problems is essential in order properly to evaluate the role of psychosomatic factors. It may be found that the patient is poorly adjusted or that he works too hard, that he takes his responsibilities too seriously, or that his work or mode of living interferes with his rest and proper relaxation. Too much emphasis cannot be placed on these factors as contributory to the clinical picture of chronic vascular headache.

In those instances where allergy plays an important role, the management should include allergic treatment. This involves the elimination from the patient's environment and diet of those substances to which he is obviously allergic. In connection with dietetic restrictions, it must be stated that one must not rely too much on skin tests. Trial and elimination diets are of greater value. It is obvious, therefore, that a long period of observation is essential to proper allergic treatment. In our experience, it has been found that food allergy is particularly important in the etiology of these conditions.

MEDICINAL treatment of migraine includes a variety of agents which are discussed below. The most valuable drug is ergotamine tartrate (gynergen). In experimental animals ergotamine blocks sympathetic nerve impulses, but in man, when given in therapeutic doses, the drug is not parasympathomimetic. Indeed its action is that of vasoconstriction. This it does not by action through the vasomotor nerves but by direct peripheral action on the *muscle* wall of the *smaller* arteries, for section of the vasomotor nerves does not interfere with this action. It is reasonable to assume then that where relief is obtained by the administration of ergotamine the headache is vasodilating.

Ergotamine is usually not of much value in histamine cephalgia. This might be explained possibly on the basis of its preferential action on the external carotid artery and its branches. Furthermore, ergotamine is of value only if administered early, preferably when the aura is first experienced. This may be due to the fact that it does not relieve the tenderness and spasm of the muscles of the scalp and neck which occur later in the attack.

In instances where gastrointestinal symptoms develop from ergotamine, atropine or calcium gluconate intravenously will counteract this side action. The dose of ergotamine tartrate is ¼ to ½ mg., given intramuscularly and repeated if necessary at hourly intervals until a total dose of not more than 1 mg. has been administered in twenty-four hours. The drug is given subcutaneously or intramuscularly in instances where it has been tried in powdered form sublingually or by mouth without any

effect. In many instances, it is desirable to teach the patient to give himself the hypodermic. When given sublingually the dose is 1 to 3 mg. followed by 1 or 2 mg. every one or two hours until relief is obtained. Not more than 6 to 10 mg. should be given in twenty-four hours. This course of treatment should not be repeated oftener than every six to twelve days.

Ergotamine is contraindicated in the presence of pregnancy, hyperthyroidism, hypertension, or coronary artery disease. The drug is so specific in its therapeutic action in migraine that it is often employed as a diagnostic sign. Ergotamine tartrate (gynergen) comes in tablets each of which is 1 mg., and 1 cc. ampules which contain 0.5 mg. A more recent preparation of ergot is dihydroergotamine (D.H.E.-45). This product is said to have action similar to that of ergotamine tartrate but is less toxic and has no effect on uterine contraction. It is given in doses of 1 mg.

Some cases of migraine are not relieved by ergotamine but are relieved by pressure on the carotid artery. In the vasospastic (white migraine) type or during the vasospastic stage of migraine, relief may be obtained by the early administration of whiskey or nicotinic acid (sodium nicotinate). Nicotinic acid is given intravenously in doses of 100 mg. or the equivalent dose in the sodium salt. Certain side effects such as flushing or a sensation of heat in the genitalia and throbbing in the vertex are occasionally experienced by the patient during the course of intravenous therapy. Niacin is administered hypodermically in doses of 25-100 mg. daily.

Endocrine therapy in my experience is not effective. The relation of this type of headache to menstruation and menopause is in all likelihood due to the vasomotor disturbances associated with these states. Oxygen may be administered with the B.L.B. mask with some beneficial results. Histamine desensitization is not an effective form of treatment. Nor are many drugs—amphetamine sulfate, potassium thiocyanate, prostigmine, ephedrine, glucose, magnesium sulfate, and vitamins—of any consistent benefit in treatment.

Thiamine chloride, 100-300 mg. per day, has been recommended. The rationale of its use is based on the observation that diuresis follows an attack of migraine. Also because of changes in water metabolism (diuresis), calcium and potassium have been employed, since it has been found that a proper mixture of these drugs will mobilize tissue fluids and increase the circulating volume.

In "red migraine," acetylcholine injected intramuscularly in doses of 0.1 to 0.3 mg. is said to be helpful. The dose may be repeated every hour for two or three times. My own experience with this drug has not been satisfactory. Antihistaminic agents have on occasion given relief to some of my patients.

Analgesics (acetylsalicylic acid, codeine, antipyrine, acetphenetidin), and sedatives (dilantin, phenobarbitol) are useful drugs in the treatment of migraine.

Case Report—The patient, a physician age 34, presents a family history of migraine and hay fever. For years he has had allergic rhinitis. He gives a history of paroxysmal, unilateral headaches which have been present for as long as he can remember. The headaches are preceded by an aura and are accompanied by nausea and vomiting. The paroxysm lasts twenty-four to forty-eight hours during the course of which he can not tolerate light, noise, or food. At times the headache is so severe that it becomes necessary to administer morphine. He states that he dreads the approach of family dinners or celebrations because they invariably bring on a headache and he ascribes their occurrence under these circumstances to the prevailing excitement. Physical examination and laboratory tests are non-contributing.

An allergic survey revealed the patient to be sensitive to chicken meat and to peanuts. This was evident both by skin tests, passive transfer, and trial feeding of both of these foods. The sensitivity was so marked that even the ingestion of food such as potatoes cooked in a pot in which chicken had been cooked would bring on a severe paroxysm of a headache.

Within the last few years this patient had developed a "blind spot" in one eye for the treatment of which he had his teeth and tonsils removed and his sinuses operated on. It developed later that the condition was due to edema of the macula and during the course of the allergic study it developed that these eye symptoms could be reproduced by feeding the patient peanuts. This is of interest from a point of view of the present discussion of the pathogenesis of migraine because it indicates the vasodilating mechanism present in these cases —in this instance undoubtedly due to the action of histamine.

At any rate, the patient learned to avoid any food which contained chicken stock or peanuts. It was realized later that chicken was served at his home on holidays and at other celebrations, and for this reason these family dinners ended frequently so unpleasantly for the patient.

HISTAMINE CEPHALGIA (ERYTHROCEPHALGIA) (HORTON)

Clinical Manifestations—The clinical picture of histamine headache or histamine cephalgia is somewhat different from that of migraine. It usually occurs later in life. There is no hereditary history. The headache is paroxysmal, severe, involving one side of the head (the eye, face, and neck). There is no aura. As a rule, there is associated involvement of the vessels of the conjunctiva and nose, so that there is nasal congestion, rhinorrhea, and lacrimation on the homolateral side. There are no gastrointestinal symptoms. Relief may be obtained at times by walking, standing, or by compression of the common carotid or temporal arteries. Cold tends to aggravate the pain. In many instances, there are associated signs of local dilatation of the skin vessels such as sweating and flushing.

As in the case of migraine, there is considerable pain and tenderness over the muscles of the scalp and neck and in many instances this disturbance is as severe as the original hemicrania. Administration of 0.2 mg. histamine may induce an attack. Intradermal testing with histamine is not always diagnostic, for the response to such testing varies greatly with the dose injected as well as the site of the test. Histamine affects the skin in different ways depending upon where the injection is made. If, for example, one employs histamine for intradermal testing at different levels of the arm or if the arm is warmed, one will obtain variable sized wheals from the same fresh dilution.

HISTAMINE cephalgia and migraine headaches are commonly hard to differentiate from each other, and in my experience there is an overlapping of the clinical picture in many instances. This may be due to an overlapping of the areas supplied by branches of the extracranial and intracranial arteries.

Pathogenesis—As was stated before, the arteries chiefly involved in histamine cephalgia are the arteries at the base of the brain, namely, the internal carotid and its branches, the vertebral arteries, the basilar artery, and the ophthalmic, anterior and middle cerebral arteries. It is therefore the *intracranial* arteries with their increased intra-arterial pressure and traction that produce the pain. Increase in the intracranial pressure relieves pain by resisting the distention and by reducing the pulsations. The dural and extracranial arteries are not involved in the process.

The headache is due to histamine action. This action may result from hypersensitivity of the involved tissues to histamine; or it may result from an inability of some individuals under given circumstances to break down proteins into the final amine stage and thus produce an excess of histamine. It should be noted that even in instances where headache develops as a result of the intravenous administration of histamine (with flushing of the face) a noticeable vasodilatation of the retinal vessels is not always apparent.

Treatment—In addition to such general measures as outlined for treatment of migraine, Horton also advises the administration of histamine to patients with histamine cephalgia.

The drug is available in 1 cc. ampules which contain 2.75 mg. of histamine diphosphate or approximately 1 mg. of histamine base. When diluted with 9 cc. of normal saline one obtains a dilution of 1-10,000 which contains 0.1 mg. of histamine per cc.

The drug is given subcutaneously beginning with 0.1 cc. of this preparation or 0.01 mg. of histamine twice daily for two to three days; then the dose is increased depending on the tolerance of the patient by 0.01 mg. per day, giving two injections daily until 1 cc. or 0.1 mg. dose has been given. This dose is kept up twice daily for two to three weeks.

Histamine may also be given intravenously as follows: one tablet containing 1 mg. of histamine (2.75 mg. of histamine diphosphate) is given in 500 cc. of normal saline at first very slowly (six drops per minute). If there is no reaction such as tachycardia, flushing of the face or headache, the solution is introduced at a faster rate so that the patient receives the entire amount in six hours. Ascorbic acid or epinephrine may be given to counteract any headache that follows this treatment. The blood pressure of the patient should be checked during the procedure.

Histamine therapy is contraindicated in the presence of peptic ulcer or vascular disease. Relief is also sometimes obtained in histamine cephalgia by pressure on the common carotid artery or on the temporal artery or by immersing the hands in cold water. Ergotamine is of no value in this condition, and antihistaminic agents are only occasionally effective.

Case Report—Patient is a female, age 43, who complains of paroxysmal unilateral headaches which have been present over a period of ten years. There is no familial history. The headaches are not preceded by an aura and are not accompanied by gastrointestinal symptoms. There is no family or personal history of allergy. Physical examination and laboratory studies are non-contributory. Cold aggravates the condition. The patient obtained no relief from ergotamine tartrate. Subcutaneous treatment with histamine (four courses in six months) has been successful.

The patient's headaches are now far less frequent and severe (only two in the past six months). On one occasion, slow intravenous histamine was attempted and the patient developed a severe headache during treatment; 0.2 cc. of epinephrine 1:1000 was introduced with a needle into the rubber tubing of the intravenous set in an attempt to relieve the headache. Within one minute she became restless, flushed, incontinent, and developed choreiform movements. These symptoms disappeared after the administration of morphine sulfate.

SINO-NASAL HEADACHE (ALLERGIC)

Nasal allergy is characterized by paroxysmal rhinorrhea, a typical appearance of the nasal mucous membrane, an atopic background, and eosinophilia in the nasal secretions. The condition may be due to inhalants, drugs, foods, or to cold.

In nasal allergy the mucous membranes lining the sinuses are edematous and boggy. The turbinates are swollen. The ostii are narrowed by edema and by inflammation. These patients frequently develop a pain in the head commonly referred to as "sinus headache." The pain is deep, dull, and aching. It is made worse by shaking the head or bending it forward, and is relieved by lying down. It usually begins in the morning and improves later in the day as drainage is established. It is also improved by local nasal vasoconstrictors and heat.

Pathogenesis—This pain results from congestion and some secondary inflammation of the sinusal ostii. Furthermore, improper emptying of the sinuses may also be contributory. The mucous membrane of the sinuses becomes boggy and swollen so that the air within the sinus cavity is compressed. Since in allergic involvement this process is reversible, the air becomes rarified when the edema disappears. Headaches, therefore, occur because of fluctuations in air pressure within the sinus cavities.

The localization of the pain is over the region of the particular sinus which is involved. Occasionally, however, there is associated pain produced by the spasm of the muscles of the

shoulders and neck. In these patients one often may elicit this pain when administering displacement treatment or otherwise treating the particular sinus which is involved.

Treatment—The treatment of sino-nasal headache consists of: (1) treating the underlying nasal allergy, and (2) medicinal, topical, and surgical treatment. This consists in the administration of antihistaminic drugs, local applications, and removal of intranasal obstructions. The purpose of this therapy is to improve nasal ventilation and drainage.

MYALGIA OF THE HEAD

Williams has recently described a syndrome characterized by local, usually unilateral, tenderness of some of the muscles of the head and neck at the point of their origin. This is associated with spasm of these muscles, and a deep smooth type of referred pain. The condition is said to be caused by allergy to physical agents such as cold, drafts, etc., and is excited by emotional factors. Injection of the involved muscles with procaine relieves the attack, and stimulation or pressing of the involved muscles gives rise to pain. There may or may not be other associated atopic conditions. It is this state of altered physiology in the muscles of the head, which according to Williams, produces the deep referred pain mistaken by patients as "sinus headaches."

The disease must be differentiated from myositis, fibrositis, and other types of chronic vascular headache. My own experience with this type of headache has been limited, but it is obvious that this is not a common condition.

Antihistaminic agents in our hands have not been effecitve in combating this condition. Some say that nicotinic acid in the form of niacin is beneficial. The drug is given hypodermically in 25 mg. doses; the dose is increased daily until the pain is relieved. When the effective dose, which is usually 100 mg. is reached, the drug is given daily by mouth for several months and after that about two or three times a week. However, it should be noted that many of these patients improve without any medication. Furthermore, other forms of physical allergy are not improved by administering niacin.

ALLERGIC HEADACHE (EYERMAN)

This type of headache does not usually bear any of the clinical characteristics of migraine, histamine headache, etc. It is brought about as a result of the ingestion of a food or drug to which the patient is sensitive. As a rule the pain is diffuse. Other associated allergic disorders may be present. Skin tests may or may not be positive. The diagnosis is established on the basis of trial diets, etc.

It is thought that the mechanism of production of symptoms is analogous to that of other atopic manifestations (urticaria, hay fever, etc.), that is, increased capillary permeability and dilatation resulting in edema of the brain. However, it should be pointed out that epinephrin rarely brings about relief. Antihistaminic agents are occasionally useful. Treatment consists in the complete withdrawal of the offending agent from the patient's diet. Medicinal treatment includes the administration of sedatives and analgesics.

Case Report—The patient is a 35-year-old female who complains of severe, frequent, paroxysmal headaches. These occur on an average of two to four times per month and are made worse by emotional excitement. The pain is distributed over the top of the head and over the occiput. Occasionally it may involve the side of the face. The patient suspects that certain foods, particularly pork and chocolate may produce the pain. The ingestion of pork almost invariably gives her severe gastroenteritis. There is an associated history of hay fever. While there is no familial history of headache, the patient's mother has asthma.

An allergic survey indicates sensitivity to wheat, pork, chocolate, and green peas. This is corroborated by clinical trial. The physical examination and laboratory tests are non-contributory. With allergic treatment the patient has been free from severe headache over a period of two years. The only time she develops a headache is when she has been indiscreet

about her diet or when she inadvertently eats one of the foods to which she is sensitive.

As stated before, one should consider under chronic vascular headache two other conditions namely, Hypertension headache and Temporal Arteritis. However, neither of these two conditions are very similar to the other types of vascular headache and therefore will be discussed only very briefly.

HYPERTENSIVE HEADACHE

This form of headache is vascular because it is due to dilatation and pulsation of the arteries of the head. It is caused by increased intra-arterial pressure and is contributed to by degenerative lesions in the arterial wall. Histamine and allergy play no role in its production.

TEMPORAL ARTERITIS

This form of headache occurs in elderly individuals. It is usually unilateral and throbbing in nature, being associated with fever, and tenderness of the scalp and over the area of the temporal arteries. Examination of the temporal artery after removal reveals narrowing of the lumen and thickened walls which show mononuclear infiltration. Intimal sclerosis is present; large giant cells are found in the media.

There are features which are common to this disease and periarteritis nodosa, rheumatic arteritis and thrombo-angiitis obliterans, but there are also many differences. Clinically the similarity resides in the presence of fever, weight loss, anemia, joint and muscle pains, arterial changes including thrombosis, thickening of vessel wall, periarteritis, intimal poliferation, etc. The fever points to infection.

Clinically, the pain is severe and disturbing. Injection of the periarterial tissues with novocaine often gives relief. Excision of a section of the artery, as indicated above, is nelpful. Since there are no allergic factors involved in this condition, allergic treatment is not indicated.

SUMMARY

Chronic vascular headache includes a group of conditions such as migraine, histamine cephalgia, sino-nasal (allergic) headache, myalgia of the head, allergic headache, and hypertensive headache and temporal arteritis. Histamine, emotional factors, fatigue, and allergy may play important roles in the causation of the first five types. The recognition of the type of headache is essential to successful therapy.

CLINICOPATHOLOGIC CONFERENCE

Chronic Dyspnea and Recurrent Hemoptysis

FROM NICHOLS VETERANS ADMINISTRATION HOSPITAL*

HAROLD GORDON, M. D., EDITOR

CLINICAL ABSTRACT

THE patient, a colored male 52 years old, was admitted December 10, 1946, because of pain in the right side and dyspnea. In 1930 he had a "cold" which persisted. During the next ten years he worked intermittently only. In 1940 he was in the hospital three months because of "heart trouble and high blood pressure." He had hemoptysis six times from 1936 to 1946, the last—and most severe—in October 1946. After leaving the hospital, he took a light job but still had severe headaches, dizziness, blurred vision, diplopia, spots before his eyes, and tinnitus. He also had dyspnea, especially during damp weather, and pain in his chest, both intermittently. He was subject to frequent colds, which tended to last a long time. He never had swelling of the feet or ankles. Shortly before admission he complained chiefly of pain in the right inferolateral region of the chest, wheezing, and shortness of breath. He had no headaches, dizziness, vertigo, tinnitus, paresthesia, palsy, pedal edema, or anginal pain when admitted.

History—He worked nineteen years in a foundry where he was heavily exposed to silica dust and claimed to be one of but three survivors similarly employed. There was no record of any family history of tuberculosis.

He appeared acutely ill and severely dyspneic when admitted. Râles were audible at a short distance during ordinary respiration. His weight was 156 pounds (normal, 180, highest during the past year, 160). His admission temperature was 102.6°; his pulse, 120; respiration, 40; blood pressure, 180/108. He had "silver wire streaking" of the retinal vessels, but no hemorrhages. His chest was symmetrical, respirations rapid and labored. He had tactile fremitus. The lungs, particularly the right middle lobe, were dull to percussion. Râles of all types were numerous bilaterally. His heart was not obviously enlarged and there were no thrills, murmurs, or friction rubs. No other abnormalities were found in the patient.

X-ray reports—December 12, 1946: The right lung, except for a small portion of the middle lobe and the base, appeared solid. There was a large cavity at the right second interspace. The left lung showed diffuse consolidation with nodular subpleural thickening. There was no radiologic evidence of cardiac enlargement or decompensation. A week later there was some improvement, but additional cavities were seen in the right lung. February 5, 1947: Infiltration in the right lung had in-

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creased considerably, and the middle lobe had a large cavity.

Laboratory reports—The erythrocyte count was normal on admission, but dropped to 3,900,000 later, the hemoglobin to 12.5 gm./100 cc. His urine was positive for albumin (+ and ++), contained coarse granular casts, and had a specific gravity of 1.020 and 1.025. Twenty-three of the 27 specimens of sputum showed acid-fast bacilli. Cultures confirmed the presence of Myco. tuberculosis. At first only occasional acid-fast bacilli were found; later specimens contained from 50 to 65 in almost every field. The sedimentation rate persistently was elevated (64 mm./hr.). The NPN was 37 mg./100 cc. on March 5, 1947.

Course—Initially he received digitalis, but this was discontinued after two short courses. He was kept at bed rest and on sedation but never responded satisfactorily. His blood pressure remained high (180/108—172/108). His venous pressure was 175 and 85 mm. water, December 24 and 29, respectively. Decholin and ether circulation times were eight and three seconds, respectively, December 29. He had an irregular fever, at times remittent, but with daily spikes in the late afternoons. He also had a productive cough with several spells of hemoptysis (150 cc. on one occasion). His weight decreased steadily to 136 pounds. Terminally, he lapsed into coma and died March 13, 1947.

DISCUSSION

DR. CARLOS FISH (Louisville, Attending Physican): It would seem that at least a part of the diagnosis is clear. When a laboratory reports 23 specimens of sputum positive for acid-fast bacilli, we should be convinced. This is the story of a fifty-two-year-old colored man who had some sort of respiratory distress for a period of seventeen years. In 1930 he had a cold, the exact nature of which is obscure. Ten years later he was in hospital for what is said to have been heart trouble, with symptoms of dyspnea and hemoptysis. You will notice that there is very little said of cough; dyspnea and hemoptysis are the outstanding complaints. Apparently he was admitted to this hospital in a semi-terminal condition. His physical signs indicate diffuse disease of the lungs, chiefly consolidation with no evidence of fluid. He had an elevated blood pressure, and the changes in his eyegrounds suggest chronic hypertension. Otherwise there was nothing outstanding about his heart. The problem, then, is to correlate his chronic history with his terminal state.

Because of the chronic dyspnea and recurrent hemoptysis, we must consider, first, the possibility of primary cardiac disease. We know he had hypertension with eyeground changes. He never complained of orthopnea. He had no edema, and his venous pressure and circulation time was normal, even terminally. So we can rule out hypertensive cardiovascular disease as the primary cause of death. From the cardiac standpoint, the possibility of so-called chronic cor pulmonale, due to chronic lung disease, also must be considered. No electrocardiographic studies are reported—were any made of the patient?

RESIDENT: Electrocardiographs showed no evidence of cardiac involvement.

DR. FISH: So there was no evidence of right axis deviation, such as would be expected in chronic cor pulmonale. The cardiac silhouette, as seen in the x-rays, does not impress me as indicative of cardiac enlargement. His venous pressure was normal on one occasion, and his circulation time was normal. Although I cannot say that it may not have been a factor terminally, I am not inclined to make a diagnosis of cor pulmonale. He also had anemia. In chronic right ventricular strain and chronic cor pulmonale, we expect an elevated red blood cell count. He had repeated hemorrhages, which would affect his blood count, but even so, he does not impress me as a "cardiac."

The next thing to consider, in view of the prolonged history with chronic cold followed by dyspnea and hemoptysis, is bronchiectasis. I don't believe we can say this man did not have bronchiectasis, but his x-ray picture can not be explained on the basis of bronchiectasis. Certainly, bronchiectasis can be ruled out as the primary cause of his illness, since his sputum repeatedly was reported positive for acid-fast bacilli. So if he had bronchiectasis, it could have been present only as a complicating factor. Malignant disease of the lung also must be considered. However, the prolonged duration rules out primary carcinoma of the lung.

Finally we come to the past history. He worked nineteen years in a foundry where he was heavily exposed to silica dust. Such a period of exposure is sufficient to produce silicosis. Those who have studied the disease say that silicosis may be produced by working in an environment where pure silica particles are less than 10 microns in size and have a concentration of more than five million particles per cubic foot of air. Under those conditions, silicosis may develop after an exposure of from five to twenty years. When the concentration is one hundred million per cubic foot, silicosis may develop in two years.

We don't know the details of his industrial environment, but apparently for nineteen years he was heavily exposed. That is an adequate build-up for silicosis. He had chronic dyspnea, increasing in severity, without orthopnea. Those are cardinal symptoms of silicosis and are quite characteristic. The dyspnea of silicosis can be distinguished from that of cardiac disease, by bedside examination, only by the contrasting lack of orthopnea in the former. So his history fits in perfectly with silicosis. But it does not account for the hemoptysis and fever. As to his terminal condition, he first had hemoptysis in 1940. Later, acid-fast bacilli were found in his sputum.

We can assume, quite reasonably, that he had pulmonary tuberculosis engrafted upon silicosis and that he developed active tuberculosis in 1940 or earlier. Later he had recurrent hemorrhages and progressive pulmonary involvement.

DR. MC CALLUM (Senior Resident in Roentgenology): The first film was taken December 12, 1946, and shows diffuse consolidation of both lungs. He also had a hazy area, probably representing a cavity, in the right lung. The next film, taken a week later, shows considerable clearing of the consolidation and a more nodular type of infiltration. Stereoscopic examination of the films shows the infiltrations extending radially along the bronchovascular tree. There is an enlarged shadow about the aortic area. That probably is an enlarged lymph node, because a similar shadow is visible on the opposite side, a little lower. The last film was taken February 4, 1947. It shows increased consolidation and several cavities.

OUR original interpretation was silicotuberculosis, and I see no reason to change the diagnosis. From the x-ray standpoint, this picture is but one of six distinct types of silicosis. It may be classed as tuberculoid pneumoconiosis, which is difficult to differentiate from pulmonary tuberculosis.

DR. FISH: In summary, then, this man had a history of prolonged, severe exposure to silica dust. He had increasing and chronic dyspnea, and the x-rays are quite characteristic of silicotuberculosis. We know that about 75 per cent of individuals with advanced silicosis die of pulmonary tuberculosis or of a combination of silicosis and tuberculosis. I see that he had albuminuria, but he had no other changes suggestive of amyloidosis. He had chronic fever without hematuria. It would be a pure guess to say that he had renal tuberculosis. We do have good grounds for a diagnosis of silicosis, pulmonary tuberculosis, and benign hypertensive cardiovascular disease.

CLINICAL DIAGNOSES

Silicosis
Bilateral pulmonary tuberculosis with cavitation
Hypertensive cardiovascular disease

DR. FISH'S DIAGNOSIS

Silicosis
Pulmonary tuberculosis
Chronic hypertensive cardiovascular disease, benign type

PATHOLOGIC DIAGNOSES

Silicotuberculosis
Tuberculous pneumonia with cavitation
Tuberculous laryngitis, tracheitis, and lymphadenitis
Arteriosclerotic nephropathy
Cardiac hypertrophy with myocardial fibrosis
Diverticula in colon

DR. GORDON (Chief of Laboratory Service): The heart weighed 550 gm. The left ventricle was moderately hypertrophied and showed patchy fibrosis. The coronary vessels were sclerotic. The right ventricle was not enlarged or dilated.

The right lung weighed 1750 gm., the left 900 gm. Both had a thickened pleura, felt dense and almost airless, cut with a gritty sensation, and presented the appearances of diffuse tuberculous pneumonia. These changes were more advanced in the right lung which had a cavity, 10 cm. in diameter, in the upper lobe. Histologic sections of the lungs presented nodular areas of silicofibrosis and diffuse tuberculous pneumonia with caseation necrosis progressing to cavitation. The pulmonary vessels were sclerotic.

The kidneys showed arteriosclerotic changes with several old infarct scars.

COMMENTS

Pulmonary silicosis is accomplished by nodular proliferation of connective tissue laid down in concentric laminae. These changes occur as diffusely scattered nodules in peribronchiolar and in subpleural lymphoid tissue. (This serves to distinguish silicosis from asbestosis, since the latter occurs chiefly in the basal lobes, and therefore is a less diffuse process.)

Pulmonary silicofibrosis accordingly may be looked upon as a type of diffuse nodular "cirrhosis" of the lungs. It occurs in three "stages." At first there is an accumulation of phagocytes with ingested silica, then connective tissue forms in the center of the focus. Later, successive layers of connective tissue accumulate, until a fully formed silicotic island is formed, with its concentric laminae and sparse cells. The process occurs very slowly, the degree and extent depending upon (1) the size of the silica particles, (2) its chemical composition (silicon dioxide and asbestos being the only two important types responsible for pulmonary lesions), and (3) the degree and duration of exposure. There is good experimental evidence that silica induces a nidus favorable to tuberculous infection. The exact mechanism by which this occurs is not known, but silica increases the virulence of strains not ordinarily highly pathogenic. It also acts to lower host resistance.

METHODS OF PENICILLIN THERAPY

An evaluation of the various technics of administering penicillin in thoracic surgery has been the subject of a study by Donnelly and his associates. The drug was administered intramuscularly, intratracheally, intrapleurally, and as an aerosol. To determine the relative effectiveness of these various methods, penicillin assays were performed on the blood serum and pleural fluid.

Intramuscular injection probably gives the best serum levels; and 40,000 units (but not 20,000 units) administered every three hours yields good therapeutic levels in the pleural fluid. Adequate serum levels (therapeutic) are maintained for one-half hour, but not for one hour, following the intratracheal instillation of 50,000 units of penicillin.

Aerosol penicillin generally gives poor results, although in some cases it is effective. Intrapleurally injected penicillin, in doses of 20,000 units, maintains therapeutically adequate serum levels for nine to twelve hours.

Clinical and Local Effects of Antacids and Physical Therapy as Shown Gastroscopically

A Scientific Exhibit from
Leo L. Hardt, M.D. and John S. Coulter, M.D.
Chicago, Ill.

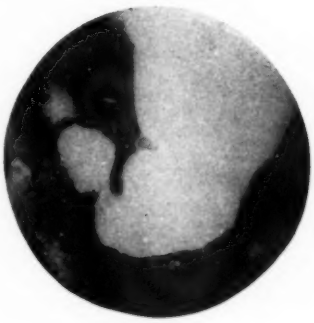
THE ROLE OF GASTROSCOPY IN THE DIAGNOSIS OF GASTRIC PATHOLOGY

X-ray Carcinoma – Gastroscopy – Acute Gastritis

Male Age 61. Gastrointestinal History; 12-9-46, severe nausea of 5 weeks' duration associated with 1 week of diarrhea.

Left—X-ray Diagnosis: 12-9-46. Diverticula of the duodenum. Marked suspicion of annular carcinoma of the pyloric canal and part of the antrum.

Right—Gastroscopic Diagnosis: 12-12-46. Reveals a beefy red mucosa throughout the stomach, particularly in the antral region. Covered with patches of thick tenacious mucus. Diagnosis—Acute gastritis.



Gastrointestinal History: 1-14-47. No gastrointestinal complaints.

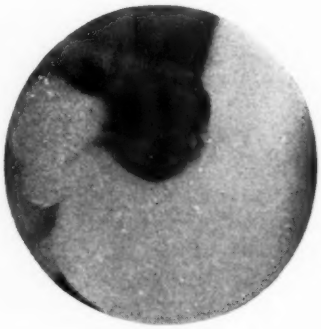
Left—X-ray Diagnosis: 1-14-47. Antrum and pylorus normal in shape and contour.
Right—Gastroscopic Diagnosis: 1-17-47. The mucosa of the stomach is now normal.

Carcinoma of the Stomach not Diagnosed by X-ray

Male Age 69. Gastrointestinal History: 1940, patient complained of weakness and was treated for anemia. X-ray Diagnosis: 1940. Suspicious of pathology in middle portion of the stomach. Gastrointestinal History: 1942. Complaints of weakness, vomiting, and hemoptysis. Treated medically. X-ray Diagnosis: 12-1-42. 50 per cent retention in stomach after 5 hours. Gastroscopic Diagnosis: 12-3-42. Infiltrating lesion proximal to antrum on the anterior wall with 3 or 4 nodular elevations. Diagnosis—Malignancy. X-ray Diagnosis: 12-12-45. Stomach showed no niche or filling defect and was empty after 5 hours.

Left—Gastroscopic Diagnosis: 12-15-45. Crater ulcer on the lesser curvature near antrum surrounded by wall of swollen mucosa; proximal and distal to this are yellowish necrotic areas. Diagnosis — Malignancy.

Right—X-ray Diagnosis: 1-8-46. Normal stomach.
Histologic Examination: Resected specimen showed malignancy. No evidence of metastasis.



Normal Stomach Diagnosed Polypoid Carcinoma by X-ray

Female Age 57. Gastrointestinal History: Upper discomfort, gas and bloating.

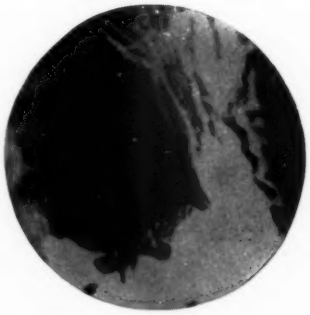
Left—X-ray Diagnosis: 2-21-47. Suspicious of polypoid carcinoma of the stomach. Advise surgery, but gastroscopy first.

Right—Gastroscopic Diagnosis: 2-24-47. Normal.

Left—Following gastroscopy, patient was x-rayed again. Diagnosis at this time—Deformity largely disappeared, but suspicious of hypertrophic gastritis.

Malignant Ulcer Not Palpable at Operation

Male Age 50. Gastrointestinal History: Four-year history of peptic ulcer, with x-ray findings indicating duodenal ulcer. Recent recurring ulcer symptoms.



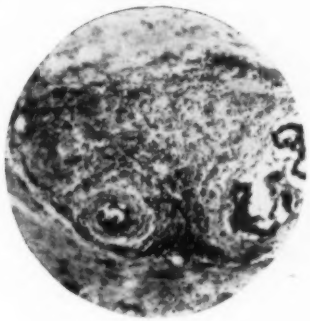
Left—X-ray Diagnosis: 5-25-40. Prepyloric lesion in addition to duodenal ulcer.

Right—Gastroscopic Diagnosis: Malignant gastric ulcer of the antrum.

Surgical Exploration: Ulcer not palpated.

Left—Resected Specimen: Gastric ulcer.

Right — Microscopic Examination: Malignant ulcer.



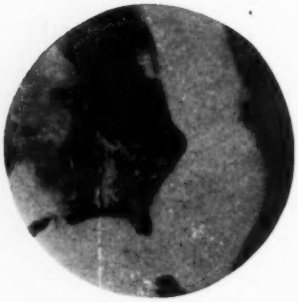
X-ray and Gastroscopy in the Diagnosis of Gastric Pathology

An analytical survey of 1,083 patients selected from a group of 4,237 that have been gastroscoped.

Type of Disease	*Number Cases*	*Gastroscopically Positive*	*Pos. Per Cent*	*Roentgen Pos.*	*Pos. Per Cent*
Gastritis, total number cases	266	266	100	2	0.8
(a) Acute type	52	52	100	0	0
(b) Atrophic type	145	145	100	0	0
(c) Hypertrophic type	69	69	100	2	3.0
Gastric ulcer (all types)	193	171	88.6	111	57.8
Gastric carcinoma	136	128	94.1	108	79.4
Gastric polypi	11	11	100	4	36-03
Gastroenterostomy stoma	34	29	85.3	30	88.2
Gastric diverticuli	4	3	75	4	100
Normal by x-ray and gastroscopy	439				
Total	1,083				

X-ray in this Case More Accurate Than Gastroscopy

Male Age 60. Gastrointestinal History: Repeated attacks of epigastric distress for the past 10 years.



Left—X-ray Diagnosis: Reveals a large penetrating ulcer on the lesser curvature in the upper third of the stomach.

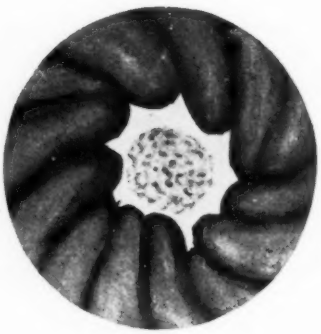
Right—Gastroscopic Diagnosis: Reveals only a small ulcer in this area with no evidence of large crater as indicated by x-ray.

Large Gastric Ulcer on Posterior Wall as Seen Gastroscopically and not Diagnosed by X-ray

Male Age 46. Gastrointestinal History: 9-1-39. Epigastric pain associated with gastric hemorrhage and tarry stools. Has had previous history of peptic ulcer for 3 years, with x-ray diagnosis elsewhere of duodenal ulcer.

Left—X-ray Examination: 10-26-39. Negative for ulcer.

Right — Gastroscopic Examination: 2-16-40. In the first portion of the stomach on the posterior wall was a large crater ulcer with a marked halo of hyperemia around it. The base of the ulcer was covered by a white membrane. Patient was placed on ulcer management and regastroscoped 8-23-40, at which time there was no evidence of ulcer.



Extensive Carcinoma of the Stomach as Shown Gastroscopically but not Diagnosed Roentgenologically

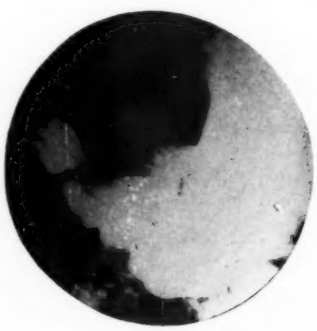
Male Age 65. Gastrointestinal History: 12-1-40. 20 lb. weight loss past four months, with peptic ulcer-like distress off and on for one year.

Above—X-ray Diagnosis: 12-10-40. Indefinite. Greater curvature side near the pylorus did not fill satisfactorily.

Above—Gastroscopic Diagnosis: 1-2-41. Entire stomach appeared stiff and difficult to inflate. In the midportion were cobblestone bulgings similar to a hypertrophic gastritis. Believe this to be an extensive infiltrating carcinoma. Surgery: Inoperable carcinoma.

Diffuse Hypertrophic Gastritis Associated with Acute Hemorrhagic Gastritis in a Patient with Normal X-ray Findings

Male Age 50. Gastrointestinal History: 6-4-40. Intermittent attacks of epigastric pain associated with repeated gastric hemorrhages. Clinical Diagnosis—Acute alcoholic gastritis and an old peptic ulcer.



Left—X-ray Diagnosis: 6-14-40. Normal stomach.

Right—Gastroscopic Diagnosis: 6-20-40. The picture is one of extensive hypertrophic gastritis, with nodules of varying sizes and contour. Mucosa is edematous and many hemorrhagic areas noted with evidence of active bleeding.

Following treatment—8-9-40. In the midportion of the stomach there are some patches of hypertrophic gastritis, both on the posterior and anterior walls. Marked improvement noted. Patient states that he is now free from distress.

INDUCTOTHERME IN THE TREATMENT OF ATROPHIC GASTRITIS AND PEPTIC ULCER

Gastric Ulcer Associated with Massive Hemorrhage

Age 67. Gastrointestinal History: Three months' history of loss of appetite, followed by massive hemorrhage. Upon admission RBC 1,440,000. Hb. 27%.

Left—X-ray Examination: 10-4-46. Revealed large filling defect along the lesser curvature. Probable malignancy.

Right — Gastroscopic Examination: 10-14-46. Proximal to angulus was a large penetrating ulcer, the base of which was covered by black and greyish material, showing evidence of recent hemorrhage. Border of ulcer bulged forth and had appearance of an angulus. Ulcer appeared suspiciously malignant.

Diagnosis — Hypertrophic gastritis, gastric ulcer.
X-ray Examination: 10-24-46. Penetrating ulcer on lesser curvature, very much reduced in size.

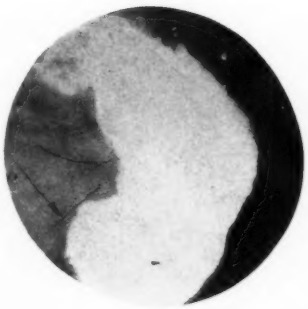
Left—Gastroscopic Examination: 11-4-46. The ulcer is now about one-fourth the size as noted on previous examination.

Right—Gastroscopic Examination: 11-18-46. The ulcer is reduced to about half the size as noted 11-4-46.

X-ray Examination: 12-16-46. Ulcer has completely healed and no evidence of hypertrophic gastritis noted.

Peptic Ulcer

Male Age 63. Gastrointestinal History: Complaints of epigastric distress 1 to 2 hours after meals for the past 6 months. Distress is not fully relieved by alkalies or eating.



Left—X-ray Examination: 9-11-45. The stomach shows evidence of gastritis and thickening of the rugae. In the pylorus there is a definite pencil-like narrowing of the last quarter of an inch. There is a small superficial ulcer in the pars media of the stomach. Rule out possible malignant change.

Center—Gastroscopic Examination: 10-1-45. There was a large ulcer with a crater covered by a white necrotic membrane. The base of the wall around the ulcer was studded with nodules—suggesting either hypertrophy or malignancy. Physical therapy (inductotherme) advised.

Right—10-15-45. The ulcer is very much reduced in size, as well as the bulging base and hypertrophic areas around the base. 11-12-47. No evidence of ulcer. Diagnosis—Gastroscopically normal. 1-28-46. Diagnosis—Gastroscopically normal.

Inductotherme in the Treatment of Atrophic Gastritis

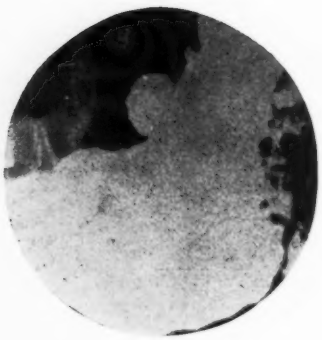
Patients with Pulmonary Tuberculosis and Atrophic Gastritis

Left — Gastroscopic Examination: Large patches of atrophic gastritis seen together with patches of reddish mucosa—physical therapy.

Right—After 6 weeks of physical therapy: The atrophy has largely disappeared and is replaced by normal mucosa.

Gastric Ulcer

Male Age 30. Gastrointestinal History: Epigastric pain 2 to 3 hours after meals for 6 weeks. Pain not relieved by alkali or food. No vomiting, no tarry stools.



Left—X-ray Diagnosis: Large gastric ulcer.

Right — Gastroscopic Examination: Large crater ulcer proximal to the angulus, near lesser curvature of anterior wall. Probably benign.

Left—X-ray Diagnosis 4 weeks later: No evidence of ulcer.

Right—Gastroscopic Examination 4 weeks later: Ulcer very much reduced in size.

Left—Gastroscopic Examination 8 weeks later: Ulcer completely healed.

Tables for Physical Therapy

Short Wave Diathermy in the Treatment of Atrophic Gastritis

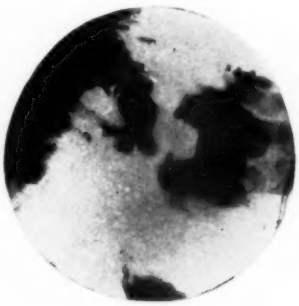
Twenty-five patients with pulmonary tuberculosis and atrophic gastritis were given short wave diathermy by electromagnetic induction to the abdomen for twenty minutes each day. This was continued for a period of six to twelve weeks. In practically every instance there was almost a complete absence of symptoms at the end of six weeks. Gastroscopically there was a reversal of the picture varying in degree from normal to moderate preatrophic stages.

Short Wave Diathermy in the Treatment of Peptic Ulcer.

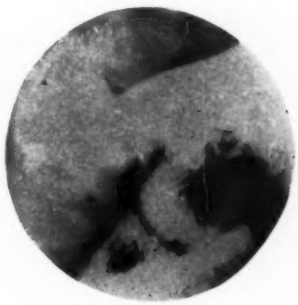
Twenty-four patients with duodenal ulcer and fourteen patients with gastric ulcer and one marginal ulcer were treated with short wave diathermy by electromagnetic induction to the abdomen for twenty minutes each day. This was continued for a period of six to eight weeks. Two patients with gastric ulcer and one with duodenal ulcer gave a history of recent massive hemorrhage. With the exception of six patients with duodenal ulcer and four patients with gastric ulcer, all were given antacid therapy in addition.

Marginal Ulcer

Male Age 35 years. Gastrointestinal History: Repeated attacks of abdominal pain not relieved by medication or diet ever since operation for ulcer. Clinical Diagnosis—Marginal ulcer.



X-ray Examination: 5-18-43. Ulcer niche of gastrojejunal stoma clinical. Gastroscopic Examination: 5-18-43. Mucosa is red and angry with increased highlights. Moderate size deep marginal ulcer is noted. Eight weeks later following daily inductotherme treatments to the abdomen.



Right—X-ray Examination: Diagnosis—No evidence of marginal ulcer. Normal functioning. Gastroenterostomy.

Right—Gastroscopic Examination: No evidence of gastritis or previous marginal ulcer.

Inductotherme in the Treatment of Atrophic Gastritis

Patients with Pulmonary Tuberculosis and Atrophic Gastritis.

Left—Gastroscopic Examination: Large areas of atrophic gastritis noted on anterior wall—Physical therapy started.

Right—After 10 weeks of Physical Therapy: Atrophy has largely disappeared and is replaced by normal mucosa and areas of hyperemia.

Gastric Ulcer

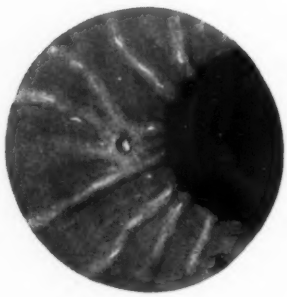
Male Age 62. Gastrointestinal History: 5-25-45. Weakness of three weeks' duration. Epigastric distress at irregular intervals without relation to meals. Occasional tarry stools. In the past two weeks frequent vomiting following meals. X-ray Diagnosis: Ulcer niche on lesser curvature of pars media.

Gastroscopic Examination: 6-7-45. Benign punched-out ulcer on the anterior wall near the lesser curvature proximal to the angulus. 6-10-45: Inductotherme started.

Three weeks later following daily inductotherme treatments to the abdomen.

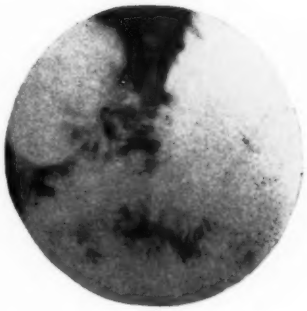
Left — Gastroscopic Examination: Ulcer reduced to one-half its original size. 6-30-45.

Right — Gastroscopic Examination: Five weeks later ulcer barely visible. 7-20-45: Ulcer completely healed.



Benign Prepyloric Ulcer

Gastrointestinal History: Epigastric distress for 5 weeks prior to admission, coming on 2 or 3 hours after meals. Relieved by food. Vomiting for 2 weeks daily. Tarry stools for 3 months. No hematemesis.



Left—X-ray Diagnosis: Prepyloric ulcer.

Right—Gastroscopic Examination: On the anterior wall near the lesser curvature about two-thirds of a benign ulcer could be seen distal to the angulus. X-ray Diagnosis: Prepyloric ulcer not visualized. Gastroscopic Examination: Gastroscopically normal. Gastrointestinal History: Gastrointestinal symptoms have disappeared.

THE PHYSICAL APPEARANCE OF ALUMINUM HYDROXIDE AND/OR MAGNESIUM TRISILICATE AND CALCIUM CARBONATE AS SEEN GASTROSCOPICALLY

Duodenal Ulcer

X-ray Diagnosis: Duodenal defect.

Antacid given 2 minutes before gastroscopy.

Gastroscopic Examination: 10-12-45. Angulus and antrum seen. The antrum folds appeared beefy-red in color. Antacid dispersed unevenly throughout in clumps of varying sizes and shapes.

Pernicious Anemia

Antacid given 5 minutes before gastroscopy.

Gastroscopic Examination: A good view of the antrum was obtained. There were large areas of atrophic gastritis in the anterior wall that extended to the cardiac end of the stomach. Near the end of the stomach, the antacid appeared to be coated over the wall with raised areas here and there. The antacid was distributed over the rest of stomach in a cob-webbed fashion with occasional clumps here and there.

Atrophic Gastritis

Antacid instilled 10 minutes before gastroscopy.

Gastroscopic Examination: This patient had only a slight degree of atrophy, on the anterior wall. The antacid appeared as a large irregular mass; no evidence of coating.

Pernicious Anemia – Atrophic Gastritis

X-ray Diagnosis: Suggests linitis plastica-carcinoma.
Clinical Diagnosis: Pernicious Anemia.
Antacid instilled 45 minutes before gastroscopy.

Right—Gastroscopic Examination: A good view of the pyloric sphincter, pylorus, and angulus was seen. The mucosa was paler than normal. On the anterior wall an extensive area of atrophic gastritis seen. Pernicious anemia patient.

At the end of 30 to 45 minutes after instilling liquid preparations, there was frequently an absence of the antacid in the stomach, as noted gastroscopically, only small flakes remain.

Normal Stomach

X-ray Examination: Normal stomach.

Antacid given 50 minutes before gastroscopy.

Gastroscopic Examination: Normal stomach with occasional clumps of antacid clinging to the anterior wall of the stomach.

The Physical Appearance of Aluminum Hydroxide and/or Magnesium Trisilicate and Calcium Carbonate as Seen Gastroscopically

We have observed the physical appearance of four of the well known proprietary aluminum gels, of magnesium trisilicate and of calcium carbonate through the gastroscope. Thirty-five patients were used in this study, 15 of whom had been previously diagnosed as normal stomachs, 3 hypertrophic gastritis, 5 atrophic gastritis, 9 duodenal ulcers, and 3 gastric ulcers.

The various antacids studied were scattered throughout the stomach in clumps of various sizes and could not be differentiated one from the other.

Where liquid preparations were used, there was frequently a complete absence of the antacid at the end of 20 to 45 minutes. X-ray studies confirmed the fact that liquid preparations made a rapid exit from the stomach.

Aluminum gels and/or magnesium trisilicate and calcium carbonate per se do not have a coating action on gastric mucosa.

In the presence of gastric mucin, aluminum gels—with or without magnesium trisilicate—infiltrate the mucin, and under these conditions have a coating action.

Tablets for their antacid effect should not be swallowed or allowed to disintegrate slowly in the mouth—but should be thoroughly chewed and swallowed, without the use of liquid.

Normal Stomach

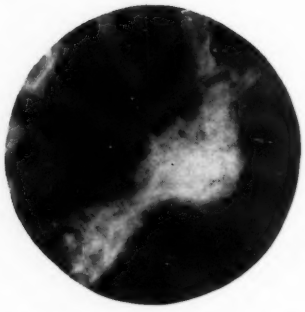
Gastroscopic examination 1 hour and 40 minutes after swallowing 2 antacid tablets without chewing. Note the almost total absence of disintegration.

Left—Tablet on posterior wall—midportion of stomach.

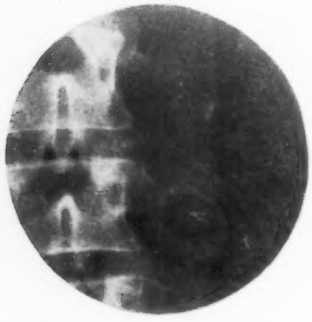
Right—Tablet on posterior wall—in lake of mucus.
Antacid should be given in powder or tablets thoroughly chewed, without the aid of liquids.

Normal Stomach

Twenty minutes after instillation of aluminum hydroxide, magnesium trisilicate, plus barium.



Twenty minutes after instillation of aluminum hydroxide and magnesium trisilicate, plus mucin with barium.



Sixty minutes after instillation of aluminum hydroxide, magnesium trisilicate, plus barium. Note absence of antacid.

Two hours after instillation of aluminum hydroxide and magnesium trisilicate, plus mucin with barium. Note antacid still present.

A series of films was made at 20-minute intervals, after the ingestion of a standard dose of aluminum hydroxide and magnesium trisilicate with barium. At 40 minutes there was a stain in the stomach. At 60 minutes the stomach was empty. Immediately thereafter barium plus aluminum hydroxide and magnesium trisilicate with mucin was used. These films were taken at 20-minute intervals and the stomach was outlined for 2 hours and 20 minutes.

Left—In the presence of gastric mucus the antacids tend to infiltrate the mucus and cling to the wall, as shown in this illustration.

When a sufficient amount of gastric mucus was present, a tendency to coat occurred. It was noted that the aluminum gels and the magnesium triscilicate had a tendency to infiltrate the gastric mucus, and under these conditions adhered to the walls of the stomach—as shown here.

Gastric Mucin Plus Aluminum Hydroxide With Magnesium Trisilicate in the Treatment of Peptic Ulcer

Clinical and antacid studies of mucin plus aluminum hydroxide and magnesium trisilicate in the treatment of peptic ulcer.

Twenty-three tests were performed on 23 patients, control aspirations of the stomach content were done at fifteen-minute intervals for forty-five minutes, following which 0.5 cc. of histamine phosphate was injected and at the same time one of the antacids was given in every instance except the control.

From the charts it appears that the mucin antacid mixture has almost a sodium bicarbonate-like rapid effect on the gastric acidity which lasts for about half an hour, and then the gastric acidity seems to return gradually to its former level. This return is less rapid and less steep than following the Sippy powders. When compared with an alumina product it has a much more rapid response. At the end of one hour the gastric acidity has almost reached the control level.

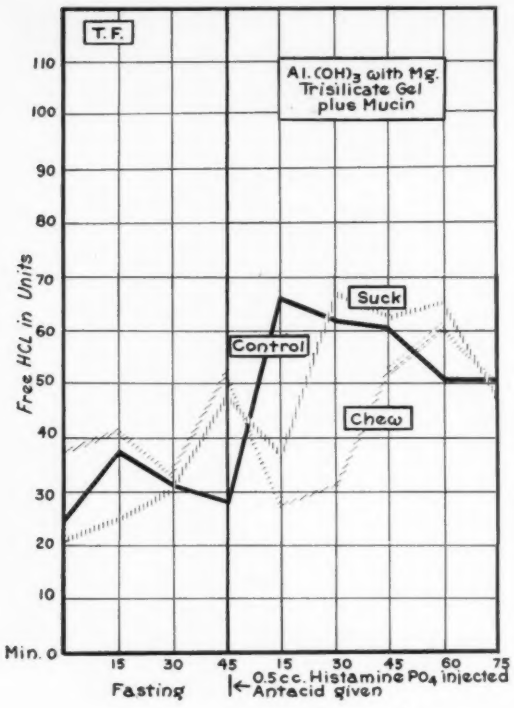
Thirty-four patients are being tested clinically with this new mucin antacid mixture. The test periods vary from three to twelve weeks. The mixture is administered in tablet or powder form and given at one to two-hour intervals. All of the patients have been promptly relieved of their symptoms and are progressing well clinically.

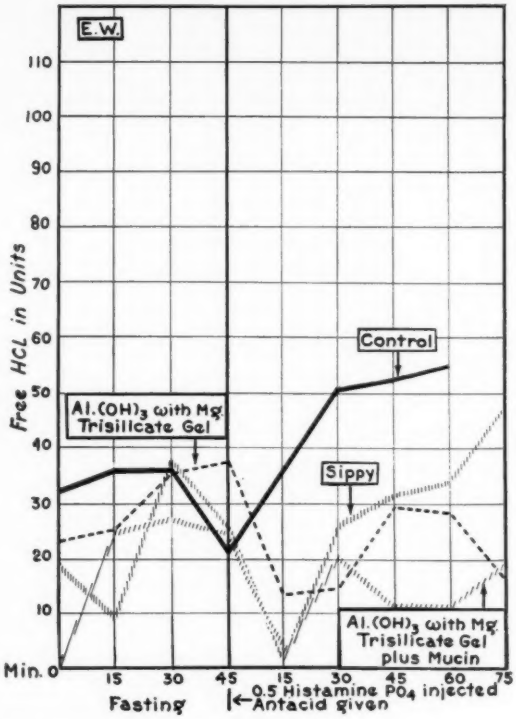
(The above tests were conducted by Dr. F. Steigmann, Assistant Professor of Medicine, University of Illinois, and Dr. T. S. Kammerling.)

The Mucin Antacid Tablet Should Be Thoroughly Chewed and Swallowed

Key to Graphs Next Two Pages

Heavy line represents the control.
Dotted line represents the aluminum hydroxide and magnesium trisilicate gel.
Dash and dot line represents the calcium carbonate and sodium bicarbonate.
Wavy line represents the mucin plus aluminum hydroxide and magnesium.
Vertical line represents the tablet allowed to slowly disintegrate in the mouth.
Slanting line represents the tablet chewed thoroughly and swallowed.





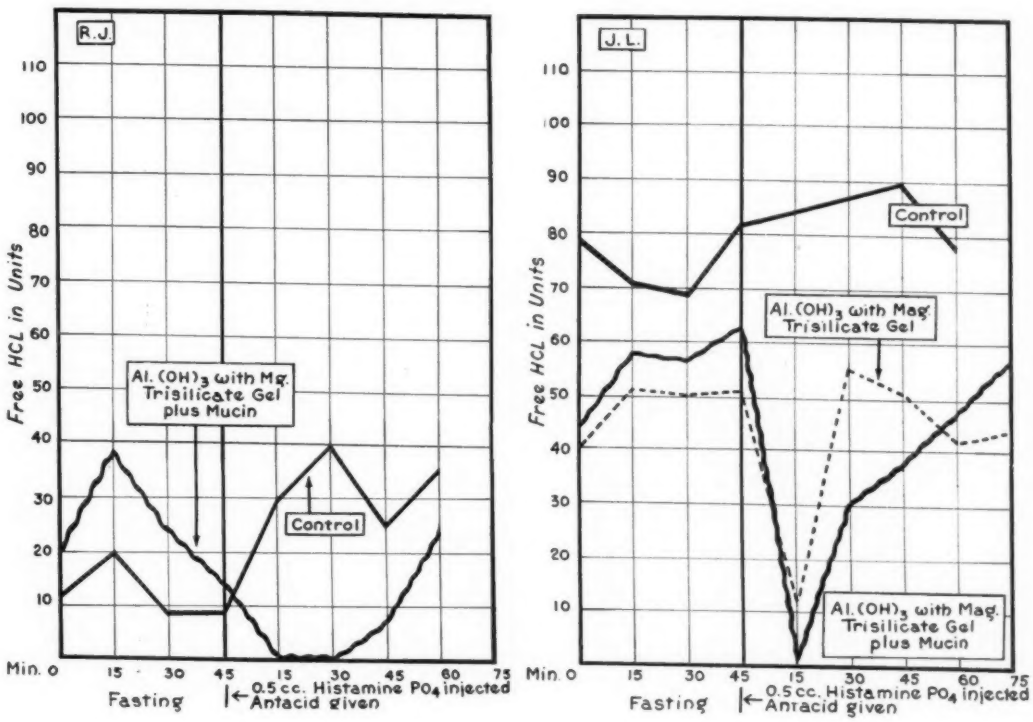
An Effective Antacid in the Treatment of Peptic Ulcer Should Have the Following Properties:

1. Combine and adsorb HCl readily.
2. Have a coating action which is both soothing and lubricating to mucous membranes.
3. Inhibit proteolytic action of pepsin HCl combination by depressing formation of pepsin.*
4. Cause no chemical disturbance in body such as alkalosis.
5. Have no unfavorable effect on gastrointestinal secretory activity.
6. Be free from histamine-like secretagogues.
7. Must not depress gastrointestinal motor activity, namely, promote constipation.
8. Must not interfere with the normal process of digestion and absorption of food.
9. Must not have an accumulative effect.
10. Must be palatable.
11. Should be taken in powder form, or a tablet chewed thoroughly and swallowed, with a minimum amount of fluid.

**Retardation of the Action of Pepsin on Frog Muscle by Gastric Mucin. Retardation of the action of pepsin in two different strengths of hydrochloric acid by 2 per cent gastric mucin was tested using the hind legs of frogs.*

CONCLUSIONS

1. Pepsin in concentrations of 5.0 mg. per 100 cc. and 10.0 mg. per 100 cc., in both 0.2 per cent and 0.3 per cent hydrochloric acid causes quite complete digestion of muscle tissue of the frog leg.
2. Retarding action of gastric mucin is more apparent in pepsin solutions in 0.2 per cent HCl than in equally concentrated pepsin solutions in 0.3 per cent HCl, although the difference is not marked.
3. The retarding action of gastric mucin in these experiments confirms the findings of Fogelson.
4. Six hours' treatment of the tissue under the conditions outlined is sufficient to demonstrate the retarding action of gastric mucin against peptic digestion.



Gastric mucin when added to aluminum hydroxide and magnesium trisilicate has a distinct coating action on the mucosa of the stomach and on peptic ulcers and remains longer in the stomach than the usual antacids.

Left—½ hour after taking the mucin antacid mixture.

Right—1 hour and 10 minutes after taking. Note the absence of clumping and the pronounced tendency to coating.

Left—1½ hours after taking. Note the filming effect still persisting along the greater curvature, posterior and anterior walls.

A Posterior Wall Ulcer Before Taking Mucin Antacid

1 hour and 10 minutes after taking mucin antacid without the dye.

The mucin antacid mixture without the dye 1 hour and 10 minutes after taking: The crater is filled with the antacid and the rugal folds radiating from the ulcer are covered by a thin film of antacid.

Anterior Wall Ulcer Before Taking Mucin Antacid With Green Vegetable Dye

1 hour and 10 minutes after taking mucin antacid with the green vegetable dye.

The mucin antacid mixture plus a green vegetable dye given to a patient with an anterior wall ulcer. Note the coating action on the ulcer 1 hour and 10 minutes after taking.

Aided by a grant from the Council on Physical Medicine of the A.M.A. and the Research Division of Harrower Laboratory, Inc.

Book of the Month—A Report

HISTORY OF MEDICINE*

THIS stout volume of 1,215 pages is among the most valuable histories of medicine to appear in recent years—in particular because of several original features. Professor Cecilia Mettler has deviated from the usual method of presenting the history of our profession by discarding the background of contemporary history and culture and concentrating on well-rounded histories of the various medical specialties covered in the standard medical curricula.

The author has succeeded admirably in "tracing the development of the particular branch of medicine from its inception to its place in modern scientific thought," and in supplying "the student with an introduction to the principles underlying the development of the fields embraced in the medical curriculum." Dr. Mettler's is indeed a unique approach, and it makes her book—as she intended—a most useful armamentum for the teacher of history of medicine, especially for the amateur historian who is called upon to teach the subject when no full-time medico-historian is available.

The subjects treated are: anatomy and physiology, which are treated together up to about 1700, and separately after that; pharmacology, pathology and bacteriology; physical diagnosis, medicine, neurology and psychiatry; venerology, dermatology, pediatrics, surgery, obstetrics and gynecology; ophthalmology, otology and rhinology. All these subjects are thoroughly covered from their beginning to beyond the middle and often close to the end of the nineteenth century.

The history of internal medicine is divided into fourteen chapters, dealing with Pre-Grecian Medicine, Medicine in Greece, Medicine in Alexandria, Medicine in the Far East, Medicine in China, Medicine in Rome, Byzantine Medicine, Arabic Medicine, Medieval Medicine, Medicine in the Sixteenth, Seventeenth, and Eighteenth centuries, the Background of Early American Medicine, and Medicine in the Nineteenth century.

No less impressive is the history of surgery, which is presented in sixteen chapters. Among them are discussions of Primitive Surgery, Egyptian Surgery, Early Italian Surgery and the Salernitan Period, Surgery during the Beginnings of Anatomy, Bologna and the diffusion of Italian Surgery to France, and the professional caste system of Paris, while other chapters follow the aforementioned pattern.

Specialties of smaller scope and those developed in relatively recent periods are not, however, slighted. Pediatrics, for instance, is represented by exactly one hundred pages, all crowded with information. The section should satisfy any pediatrician who is interested in the history of his specialty, and it even provides him with plenty of material for teaching the subject.

Dr. Mettler shows her talent in the presentation of each specialty at a given period. She knows how to summarize the developments and bring out the essentials. In the chapter on Pediatrics in the eighteenth century, for instance, she discusses the fact that the textbooks of the period lacked proper organization of the material. Michael Underwood's work "presented a curious array in which symptoms, true disease entities, physiologic states, comments on psychology and the meconium are thrown together in what appears to be purely arbitrary fashion," though he did arrange his material somewhat according to "age of the patient, frequency of occurrence and supposed cause."

Dr. Mettler discusses the change of the occurrence of diseases in childhood since the eighteenth century; many diseases were described in medical works dealing with adults rather than children (e.g. smallpox).

*History of Medicine. By Cecilia C. Mettler, M.D.: Edited by Fred A. Mettler, M.D. 1,215 pages. The Blakiston Company, Philadelphia and London, 1947. Price $8.50.

A discussion of the infant and the child welfare situation includes an excellent description of the wetnurse problem, especially in England and France. There she tells the sordid story of "overlaying" which was long recognized as a cause of death in the London Bills of Mortality; describes the Foundling system, with its unbelievable mortality; gives a translation of a large portion of the decree passed by the French National Convention (1793) to relieve the economic pressure of indigent families; and describes the foundling hospital of Thomas Coran (1741) and discusses the situation in America.

There is also discussion of diseases due to parental influences and of pyloric stenosis (with the early description by Patric Blair in 1717), Ichthyosis and the "Sclerema neonatorum complex," with a translation of Underwood's excellent description. Dr. Mettler points out the confusion of sclerema and edema neonatorum and scleroderma, which was straightened out by Parrot in the nineteenth century. We find Icterus neonatorum familiaris (fetal erythroblastosis) in its earliest descriptions, developmental anomalies of the heart and great vessels with a translation of the lengthy description of Underwood's and congenital anomalies of the neural system (Encephalocele, spina bifida, hydrocephalus, "hydrorachitis").

Special attention is given to Hydrocephalus: Astruc's classification in four types (1746), Robert Whytt's posthumous publication of the famous "Observations of the dropsy of the brain" (1768) which confused meningitis and hydrocephalus (a long translation gives us the original texts), the opinions of Silvester O'Halloran (posttraumatic hydrocephalus), John Fothergill, and Underwood.

To complete the development of the pathology of hydrocephalus the author gives a description of Eberle's "Arachnitis" (1829) in which he definitely distinguishes the hydrocephalus secondary to arachnoid inflammation, further the hydrocephalus caused by uremia and Underwood's etiologic division: postinfectious, traumatic, neoplastic, and congenital types. Then comes some discussion on herniae, imperforate orifices, hairlip, cleft palate, superfluous parts and fistulas and the attempted surgical repairs; congenital anomalies of the limbs and joints are mentioned, and the well-known

Reduction of dislocations.
(From an ancient Greek cudex.)

coinage of the word "orthopaedia" by Nicholas Andry (1741), as well as the not so well-known fact that Andry's work also contains non-orthopedic chapters, e.g. one on tic.

Infectious diseases are represented by a chapter on smallpox and the beginning of vaccination. Varicella was separated from smallpox, though Sauvage (1760) considered it a variety of variola; there are some original descriptions including that of Cullen (1791). "Perhaps the worst eighteenth-century confusion in the field of pediatrics was the inability of practitioners of the day to make a clear distinction between diphtheria and scarlet fever"; men like Sydenham, Fothergill, and Cullen were no exceptions (*Cynanche maligna, Scarlatina anginosa,* etc.).

The literature on diphtheria begins to clarify the various symptoms (change of voice, cardiac failure, the pseudomembranes and palatal paralysis), and postscarlatinal hydrops is recognized, but much confusion remains. There was no less confusion between measles and German measles, and probably between measles and scarlet fever. We hear of early inoculation experiments with measles (Francis Home 1759). Epidemic parotitis was well

Pompeian surgical instruments.

described by R. Hamilton in England but the complicating encephalitis in cases with orchitis was described by Underwood who also claimed that it was much more common in America.

Poliomyelitis did not appear as a distinct entity but was usually confused with Pott's disease, though Underwood seems to have suspected the true condition as shown in part of the original text. Tetanus neonatorum was well known, also Tetany ("inward convulsions") which is presented in William Moss' description (1781). There are also chapters on gonorrhea and syphilis, pertussis and the croup complex, rickets, and some endocrine disorders. One could hardly ask for a better review of pediatrics in the eighteenth century.

The author tries to explain the concept of various pathologic conditions described at certain periods without trying to force them to agree with our modern concepts. Just to give an example: When discussing a complex called *cynanche* she says: "The descriptions of *cynanche maligna* do not correspond to any known disease, and it is quite obvious that no single patient ever showed a picture such as Cullen described under this name." When discussing early descriptions of certain diseases before their clinical picture was clearly developed, she has adopted the method of presenting them as "complexes," e.g., the pertussis complex, the rickets complex, diphtheria complex, the leprosy complex, and many others.

Among chapters of particular excellence are those on "The Question of the Antiquity of Syphilis," the "Leprosy Complex" and the *Morbus Gallicus*. They present much discussed subjects in particularly lucid form, and they are fortified with numerous references to original authors and medical historians.

An outstanding feature of this work is the presentation of numerous quotations from important, original texts in English translation, often at considerable length. Professor Mettler showed excellent judgment in the selection of the most essential portions from the various medical authors.

The immense wealth of material makes one understand why it took the author nine years to prepare this work. Numerous footnotes and notes in the text supply references to original sources, largely in English translation.

Each chapter is supplied with an ample bibliographic list of books and articles on the various phases and important figures of each specialty. Only English literature, published for the most part in recent years, is presented in these selected readings. Each chapter is illustrated with the portrait of a physician who did important original work in the particular specialty.

A thirty-eight-page index of personal names in the text and a seventy-page subject index are very helpful to the reader of this work. The years of birth and death are given with personal names.

The end papers illustrate the routes of transmission of medical tradition (Primitive transmissions, Graeco-Roman period, Arabian Period, and Modern dependence).

Cecilia C. Mettler was professor of Medical History in the School of Medicine of the University of Georgia and Associate in Neurology of the College of Physicians and Surgeons, Columbia University. In the preparation of this work she was ably assisted by Fred A. Mettler, associate Professor of Anatomy of the College of Physicians and Surgeons, Columbia University, who supplied the chapter on Neurology and Psychiatry and acted as editor of the entire volume.

Cecilia Mettler did not live to see the fruit of her labors in print as she died a few days after completing the manuscript. This work is a fitting memorial. Her portrait etched by Ivan Summers (1944), is the frontispiece. The book will be useful to the amateur historian called upon to teach the history of a medical specialty, to the medical bibliographer and medical librarian, to the student as well as to the specialist, to the physician in general practice, and even to the layman looking for information of medical history. All will appreciate the clarity of the language in which it is presented and the simplicity of the arrangement of the wealth of information here made available.

R.R.

RECEIVED THIS MONTH

CORNELL CONFERENCES ON THERAPY, Volume II, Edited by Harry Gold, M.D., managing editor. This volume comprises a series of 16 conferences selected from the total of more than 100 published in the past few years. New York, The Macmillan Company, 1947. Price $3.75.

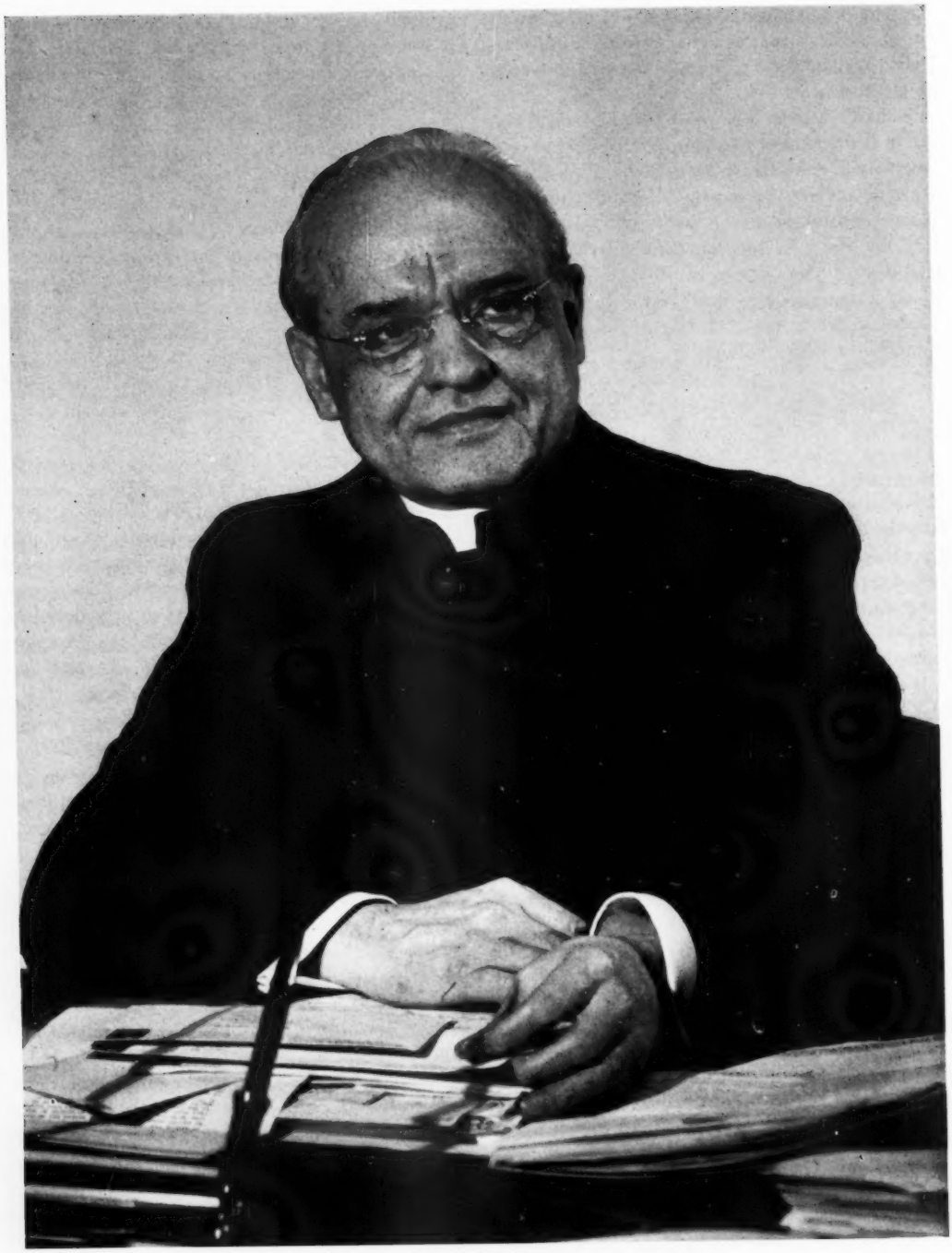
SURGICAL DISORDERS OF THE CHEST, Diagnosis and Treatment, by J. K. Donaldson, M.D., Diplomate American Board of Surgery; Associate Professor of Surgery and in charge of Thoracic Surgery, University of Arkansas School of Medicine; Surgical Staff, St. Vincent's Infirmary and Visiting Staff, Baptist Hospital, Little Rock, Arkansas. Ed. 2. 485 pages, 147 illustrations and 2 color plates. Philadelphia, Lea & Febiger, 1947. Price $8.50.

DISEASES OF THE NOSE, THROAT AND EAR, By William L. Ballenger, M.D., late Professor, School of Medicine, University of Iillinois, and Howard Charles Ballenger, M.D., Associate Professor and Acting Chairman of the Department of Otolaryngology, Northwestern University School of Medicine, Assisted by John J. Ballenger, M.D., Research Fellow in Otolaryngology, Northwestern University School of Medicine. Ed. 9. 993 pages with 497 illustrations and 16 color plates. Philadelphia, Lea & Febiger, 1947. Price $12.50.

A TEXTBOOK OF CLINICAL NEUROLOGY (With an Introduction to the History of Neurology), By I. S. Wechsler, M.D., Clinical Professor of Neurology, Columbia University; Neurologist, Mount Sinai Hospital; Consulting Neurologist, Montefiore Hospital and Rockland State Hospital, New York. Ed. 6. Illustrated, W. B. Saunders Company, Philadelphia, 1947. Price $8.50.

THE DEVELOPMENT OF MODERN MEDICINE, By Richard Harrison Shyrock, Ph.D. An interpretation of the social and scientific factors involved, from the seventeenth century to the present day. New York, Alfred A. Knopf, 1947. Price $5.00.

PHARMACOLOGY, THERAPEUTICS AND PRESCRIPTION WRITING (For Students and Practitioners), By W. A. Bastedo, Ph.G., M.D., Consulting Physician, St. Luke's Hospital, New York; St. Vincent's Hospital, Staten Island, and The Staten Island Hospital. Formerly Associate in Pharmacology and Therapeutics and Assistant Clinical Professor of Medicine, Columbia University. Philadelphia, W. B. Saunders Company, 1947, ed. 5. Price $8.50.



THE REV. FR. ALPHONSE MARY SCHWITALLA

MEN OF MEDICINE

HIGH PRIEST OF MEDICINE

ORGANIZED medicine and medical education owe a great debt to the handful of British Honduras guides who, in January, 1916, struggled out of the jungle too late to let the 34-year-old Jesuit with them catch his boat.

Aboard the departed vessel was Dr. Edward N. Tobey of the St. Louis University School of Medicine. Together with the young Jesuit he headed a scientific mission which had been studying hygienics and tropical diseases in this portion of Central America. While his be-collared colleague languished in Honduras, Dr. Tobey went on to Guatemala; there he embarked on a ship that was caught in a Caribbean hurricane and never heard from again.

The Jesuit whose tardiness saved him from a Davy Jones fate was the Rev. Alphonse Mary Schwitalla, S. J. Had he caught his boat the medical and hospital world would have been denied the benefit of one of its most tireless, constructive and pungent intellects.

It is likely that this spare, stately man with the searching brown eyes and the ready wit is today one of the best known American members of his priestly order. Nor have his accomplishments been religious in character, in the sense of being confined to the pulpit and the confessional.

Father Alphonse Schwitalla, now 65, has lived to become dean of the St. Louis University School of Medicine, for almost two decades until his recent retirement, president of the Catholic Hospital Association, a member of Alpha Omega Alpha and half a dozen other honorary medical and biological societies, and a topflight spokesman for the cause of voluntary health and hospital care. In the army he holds the reserve grade of Lieutenant Colonel, ordinarily given by the Chaplains' Corps to bishops. He is the kind of man who has been wont—and able—to drop into the White House when he believes the head man there needs a spot of advice.

Barred by his vows from taking an M.D. degree, he has nevertheless been high in the councils of the American Medical Association more years than youngsters in the profession can remember. He helped author the famous minority report to the 1928-1933 study of the Committee on the Costs of Medical Care, defending the traditional doctor-patient relationship against what he foresaw as the dangerous encroachments of compulsive-care thinking. With Dr. Herman G. Weiskotten, dean of the Syracuse U. medical school, Dr. William D. Cutter, then secretary of the A.M.A. council on medical education and hospitals, and Dr. Hamilton H. Anderson of the A.M.A. council, Father Schwitalla studied and hooper-rated the nation's medical schools for the A.M.A. in the monumental "Medical Education in the United States 1934-1939."

The quartet, fast friends despite differences in faith and outlook, called themselves "The Early Settlers." After the thick report was published, the other three tenderly autographed a copy which now reposes on Father Schwitalla's work piled desk in his St. Louis office. Dr. Cutter signed himself "one of the lesser of the four horsemen." Dr. Anderson wrote beside his own name, "the least of these." It was a touching tribute, typical of the way most leading physicians regard the busy priest.

Because he is stern toward his students in St. Louis, as befits a perfectionist who insists on compliance with rules, many come to be in awe of him. Very likely, they do him a disservice.

He is rarely happier than when the medical students at St. Louis University put their dean "on the pan," at their Christmas parties. Often, he responds to these ribs with comic jingles, which he is fond of composing.

The Schwitalla sense of humor, coupled with his universal integrity and his ability to think fluently on his feet, have served physicians and hospitals well. Perhaps they never were more pertinently used for the side which he champions than when Father Schwitalla appeared as one of the witnesses before the Senate Committee on Education and Labor, considering the Wagner-Murray-Dingell bill in 1946.

Having delivered a thoughtful statement on what he considered the incompatibility of compulsory governmental regulation and high-quality medical care, Father Schwitalla sat back to parry a cross-examination at the hands of Senator James E. Murray. At one point Senator Murray suggested there existed a great many cases where doctors were compelled to give up their practice because they could not earn enough to sustain their own families. Testimony then went as follows:

REV. SCHWITALLA: Mr. Senator, I am sure you are not taking that too seriously, are you?

CHAIRMAN MURRAY: I heard of some cases myself.

REV. SCHWITALLA: If you visualize your own child dying through an accident how much are you going to pay the doctor to keep that child alive? Are you not going to pay the limit?

CHAIRMAN MURRAY: Yes.

REV. SCHWITALLA: That is the reason why if you have a toothache at 3 o'clock in the morning, you are perfectly willing to pay a pile of money for relief. Of course after the pain leaves, you are sorry that you have to pay that much money. Most people complain about the doctor bill, but they forget their suffering, and when they get relief they hate to pay the doctor. Then, all of a sudden, the doctor charges too much money.

With Senator Murray subsiding for a moment, Missouri's Senator Forrest Donnell suggested that establishment of a mass-production, fee-basis system of medical care might engender deterioration. Father Schwitalla set to, with a will:

REV. SCHWITALLA: I fully agree with you. . . . There has to be a human side . . . and you cannot pay for that. There is no relationship at all, one is not divisible by the other or into the other or anything else. There is no common denominator. I can determine to the utmost fraction of a millimeter the distance between here and any spot in New York City. But are you going to be able to find the distance between here and the end of the rainbow? There are certain things that cannot be analyzed quantitatively. That is what we have done with this, pardon me, damnable fee schedule.

Senator Donnell then asked Father Schwitalla if the views he was expressing matched those voiced when he addressed the National Physicians' Committee for the Extension of Medical Service a few days before in New York.

FATHER SCHWITALLA: Yes, I always say the same thing on a particular subject. It is a matter of ethics. (Laughter.)

Always, Father Schwitalla has seemed a bit of a pioneer in the ranks of his church. This was apparent in the twenties when his careful evaluation of evolution brought him an invitation to testify for the defense in the Scopes "monkey trial." It was reflected again only this year when his activities in the fight on venereal disease earned him an honorary life membership in the American Social Hygiene Association. Inevitably, there must have been a few more cautious churchmen who tsk-tsked the Schwitalla drive.

SOME of this spirited independence seemed evident when Alphonse Schwitalla was a boy attending parochial school in St. Louis' tough Kerry Patch district, during the nineties. He is remembered by contemporaries as having been "different." While other young buckos were off playing cork ball, blonde, skinny, round-faced Al Schwitalla was in a corner with his nose in a book.

"Always led the class with grades next to perfect, a kind of a genius who lived in another world," a friend has said. Perhaps it was the influence of his sensitive mother who came to St. Louis from Upper Silesia with her pious tailor-husband and her son when the latter was scarcely three.

Very abstemious, and shunning meat and eggs, as he has continued to do all his life, the boy seemed to make a success of everything he touched. He was not quite 18 when he entered the Jesuit order. His three sisters later followed him, entering the school sisters of Notre Dame. If science and medicine evoked signal responses in him, there was yet no clear indication of this.

But biology and zoology were in the air. Evolution talk had swept across the religious community like a hot wind; perhaps it was the presence of what appeared to be a challenge that drew novitiate Schwitalla. At any rate, he soon turned his principal attention to the St. Louis University laboratories; there he became a biology and physiology instructor in 1910, following bachelor and master of arts degrees from the university and a tenure on the faculty of the Jesuit St. Xavier's College in the city of Cincinnati.

Later, Father Schwitalla also taught at Rockhurst College, Kansas City. Finally in 1921, harbinger of things to come, his church superiors sent him for further graduate study to Johns Hopkins University. There he won his Ph.D., and a Phi Beta Kappa key to boot and completed studies on what was to be his last real laboratory project: observations of ameboid locomotion. In later years, Johns Hopkins was to list the priest as one of its "distinguished" alumni and in 1925 as "one of the five leading" U. S. medical instructors. He was the first Jesuit to study in the Johns Hopkins biology department.

It had become evident that Schwitalla had two outstanding characteristics: A strong leaning toward biology and a genius for organization. Upon his return to St. Louis, therefore, the university made him regent of the medical and dental departments and an instructor in the biology department, which he eventually headed.

It was in this capacity he received a telegraphed invitation from Clarence Darrow to serve as an expert witness in the Dayton, Tenn., evolution trial.

"Can you come and testify at Dayton trial if needed," Darrow wired. "We really should have a Catholic priest biologist. Curtis and Metcalf (scientists who already had testified) join in urging this invitation. Going well so far."

Judges ruled out further scientific testimony before Father Schwitalla could respond, but comments from him on the evolution question are not lacking. "Evolution does not rule God out of the universe. Evolution and creation are compatible," he observed in a 1925 talk. "You must have the concept of God to understand how the earliest matter was set in motion. We will never be able to prove how life started in lifeless protoplasm."

The young priest regarded as "slanderous" the suggestions from some quarters in the hectic twenties that his church was "muzzling" scientists engaged in anthropologic studies. His favorite story was and remains that of the meeting between Dr. Elias P. Lyons and the Rev. William B. Rogers, who as president of St. Louis University had asked Dr. Lyons in 1901 to build a rejuvenated medical school faculty. "One question, Father," Schwitalla quotes Dr. Lyons as saying to Father Rogers. "Suppose by some fortunate stroke, I succeeded in synthesizing life in the laboratories of St. Louis University and came and told you either I was working on the problem or that I had succeeded in solving it. What would you do?"

"Dr. Lyons," the Jesuit university president answered quietly, "If life is to be synthesized by the physiologist or the chemist or by anyone else, I hope and pray fervently that it may be done in the laboratories of St. Louis University."

It is on the record that Father Schwitalla has pursued this policy since he became dean in 1927.

Still at the university and a warm friend of Schwitalla's, though he is not of the Catholic faith, is Dr. Edward A. Doisy, who brought a Nobel prize to the institution for his work with Vitamin K. Schwitalla it was who started Doisy's researches out, on a shoestring, and provided the encouragement that kept Doisy's genius active and resulted in his major scientific accomplishments.

When Father Schwitalla was named medical school dean, much to the pleasure of the local medical society which called him the "beau ideal," he also assumed duties as dean of the school of nursing. He continued, until 1944, as regent of the dental school and director of the biology department. To this neat quota of duties, he added in the ensuing years active leadership in almost 50 scientific organizations. He took over "Hospital Progress," organ of the Catholic Hospital Association in 1928 and has continued as editor ever since. His writings pop up with startling frequency in more than a score of the leading scientific journals.

Asked how he keeps pace with this severe schedule, Father Schwitalla smiles. "Many of my interests overlap," he says, a bit too easily.

To his genius for organization, Catholic circles freely credit the present status of nursing nuns of the 1,100 Catholic hospitals of the nation. Early in the game, Father Schwitalla organized the training which soon found the sisters moving as competent workmen into the realms of dietetics, x-ray, and laboratory work.

A veritable theme song with him has been to stress "the nurse's basic interest—concern for the individualized patient." First Jesuit to be named president of the North Central Association of Colleges and Secondary Schools, he gave the Catholic nursing schools their first evaluation program, patterned after that of the association.

FATHER SCHWITALLA's concept of the relationship of physician-patient as "priestly" has been with him for decades, but somehow, wherever he voices it today, it seems to glow with the lustre of postwar newness. Early in the thirties, he was admonishing "specialists should grow, not be made." His Christian approach to the rendering of care of the sick made him, even then, a medical Joshua, warning in a profusion of speeches and writings that regular residencies and other steps were necessary to encourage the general practitioner, that organized medicine and the voluntary hospital system stand or fall on what he likes to call "its concern for the maintenance of respect of human values and individual dignity."

"The experienced physician does not keep his knowledge in pigeon-holes," he says bluntly. "Although it is paradoxical, I may say the best specialist is the best general practitioner."

Withal, Father Schwitalla is still a priest. He lives, as always, in a bare room of the Jesuit quarters in St. Louis containing little more than a desk, a few chairs, and his iron bed. In accordance with the vow of poverty, not even the clothes he wears are his own. Only grave illness keeps him from saying his daily mass. When he was touring the medical schools with the A.M.A. committee, he would excuse himself along about 11 P.M. "Have to do my homework, you know," he'd explain and go off to say his offices.

His remarkable will-power was demonstrated when, due to ill health which has annoyed him in recent years, his medical cronies who tend him suggested he swear off his beloved pipes and those "Jesuit stogies" which he was wont to smoke. "On July 2, at 3 P.M., he quit—just like that," recalls his hero-worshipping secretary, who has been with him twenty-one years.

"His language is so masterfully general he can wriggle out of anything," a friend observes. Victim of a horrendously active schedule of out-of-town speaking engagements, he makes his talks from notes which he dictates with a Thesaurus at hand. "Now Ruth," he often tells his secretary, "we must get exactly the right word. This is to be given to a very scholarly group." He shuns the use of a dictaphone or any other mechanical device for dictation. "You cannot prepare a speech without an audience," he explodes.

He is a great coiner of phrases. Around the medical school, perhaps his best-known epithet is "porch climber" which he applies to those whom he believes are ambitious quacks. Diligent medical students who comply with all the rules come to see Schwitalla's real nature. "Hello, boy!" he will greet them in the school hallways, after returning from one of his trips.

Colleagues can muster only awe for the Schwitalla memory for statistics and obscure bits of medical information. "He whistles figures," a faculty member blurted recently. When in good health, his working day ordinarily began at 5 A.M. and lasted until after midnight. It has not been unusual for the night watchman to find Father Schwitalla asleep in his office chair or in one of the laboratories of Firmin Desloge Hospital, which Schwitalla saw rise as a materialized dream across the street from the St. Louis University medical school.

Only ill health has forced him recently to pamper his palate. Previously, he ate practically no solid food except when cajoled. Rocquefort and Camembert cheeses were his only indulgences. And coffee enriched with three or four spoons of sugar, which may have led his fellow Jesuits to give him the nickname "Sweets."

On the few occasions when he can wade through the 15 to 20 personal letters which come to him each day, and the mass of scientific and educational reading which he avidly digests, he is apt to take from the choked bookshelves in his office a

volume of Joyce Kilmer, Francis Thompson, or G. K. Chesterton, all favorites of his.

He delights in using his lusty tenor voice for a bit of community singing. One of his sieges of ill health doubtless was hastened by his insistence against doctor's orders on attending an anniversary celebration for Dr. Daniel Schoemaker, at which Father Schwitalla led in the vocalizing.

Personal disability is a source of extreme annoyance to him as is any time given to precautions for personal comfort. Topcoats, rubbers, and umbrellas long have evoked his extreme displeasure. On the occasion of his most recent illness, he issued strict orders that no word of his malaise be given to the community.

One might think he abhorred being made over. The fact is that Schwitalla is an arrant sentimentalist; for years now, the gold key proffered him by one of the medical school classes has hung from a blue ribbon on the back of his office door and must not be moved. On the occasion last month of his twentieth anniversary as dean of the medical school, a small group of intimates gathered for a celebration at the hospital room where he was confined; an operation, just a few days before, for the severance of his phrenic nerves did not keep the good father from talking a blue streak.

Perhaps illness nettles him more than ever these days because he sees in the current period a crisis for medicine and medical education, and is consumed with the desire to voice his own trenchant views. While championing more effective public health, he fears that to reach it through compulsion is to deplete the store of individual responsibility he thinks necessary for a more intelligent and enlightened citizenry.

"If we can achieve our purpose through the encouragement of voluntary initiative, we shall strengthen the sense of responsibility of the individual," he said recently. "We shall safeguard the dignity of the individual as that of a person who is intellectually and emotionally competent to make his own choice of the manner in which he obeys the natural law to care for his health and that of his dependents."

For Alphonse Schwitalla, every day in a sick room is a day lost, in the race to prove that voluntary initiative can accomplish the nation's health task. Even as he regards the medical school, the nursing school, and the modern hospital which by dint of his own personality, he has seen grow into formidable factors in his home city, he angles impatiently for funds to expand them further. "Give him a million dollars," the university treasurer said of Schwitalla last December, "and he'd have it spent by Christmas."

The gentlemen of the St. Louis Medical Society seem to have called the turn on him when they commented, upon his elevation as medical dean in 1928: "By disposition, by training, by humanity, by that intangible, indefinable quality that endears him instantly to an acquaintance or an audience, Father Schwitalla has proven that he is the Man for the Position."

R. S.

EDITORIALS

SURGICAL TREATMENT OF HYPERTENSION

If one follows the history of surgery through the last fifty years, one is impressed with the fact that in the early stages of development, anatomy and dissection were stressed. The second era in the development of surgery involved pathology, and we have now entered into the third era, which should be called "the era of physiologic surgery." In no other condition is this so true as in the surgical approach to the treatment of hypertension and it is necessary for us to realize that the effect of the operation is in no way associated with the pathologic characteristics of the tissue removed but is associated with the physiologic effect.

The treatment of vascular disease by means of interruption of the sympathetic fibers carrying vasoconstrictor impulses opened up a new field of therapy. It was soon borne out that the functional vascular diseases, exemplified by Raynaud's disease, could be relieved, but that the other vascular diseases involving obliterative arteritis could be relieved only in so far as the vasomotor spasm of the vessels themselves and the collateral circulation could be lessened, promoting increased circulation.

This phenomenon led to the problem of the application of sympathectomy to the relief of hypertension. It has long been known that three factors involved in the maintenance of blood pressure are (1) the viscosity of the blood, (2) the power of the blood stream as initiated by the contraction of the heart, and (3) the caliber of the peripheral vessels. The internists who have studied hypertension have assured us that the viscosity of the blood remains the same in hypertensive and nonhypertensive patients. The cardiographers have assured us that the impulse initiated by the heart is the same. Therefore we have assumed that there must be some difference in the size of the vessels and that vasomotor integrity plays an important part. This has been borne out by microscopic examinations of sections taken from various parts of the body, skin, kidneys, muscles and so forth, where there is a very definite narrowing of the diameter of the vessels.

To return once more to the history of hypertension, we note that Richard Bright, more than a hundred years ago, reasoned that the production of hypertension is due to altered quality of the blood, which in turn causes hypertrophy of the heart together with primary disease of the kidneys. This conclusion went unchallenged for about thirty years but at the end of this period Sir William Gull expressed the opinion that the underlying cause of hypertension is widespread vascular lesions.

These two hypotheses have come down to us through the years, and in addition there have been expressions by such men as Volhard and Farr that the primary cause of essential hypertension is renal dysfunction. It would seem, therefore, that hypertension, or an elevation of the normal blood pressure, may be due to a number of different causes, or may be due to a combination of factors. And in addition to the physical factors, the neurogenic and emotional influences play a part.

The treatment of hypertension by operation on the sympathetic nervous system has stimulated a new interest in its etiology and treatment. Of all adults 15 per cent have hypertension and then, too, 23 per cent of all deaths at an

age greater than fifty years are directly attributable to this disease. Cardiovascular-renal disease, of which hypertension is an important factor, causes more than four times as many deaths as cancer, and hypertension apparently accounts for more deaths each year than does either cancer or tuberculosis. Hypertension is, therefore, one of the most common and serious conditions that come under the care of physicians, and any therapeutic innovation which may lessen the mortality rate should be given careful consideration.

It is not unusual for surgeons who are attempting to analyze their surgical results to consider the survival for five years in the treatment of cancer or other malignant diseases. Therefore, in view of the fact that hypertension simulates cancer in its mortality, it would seem that we should consider the survival over a certain period of years.

IN order to have some yardstick by which to measure surgical results of the treatment of hypertension, the results obtained by medical treatment have been used. The internists have made some attempt to group the patients according to the severity of the disease and the prognosis. Patients suffering from hypertension have been examined and followed by internists, ophthalmologists, and pathologists, who have estimated their life expectancy in similar fashion to the statistical evaluation of the results of treatment of cancer patients in which there has been a grading of the malignancy of the tumor.

Thus if we accept the challenge from our medical colleagues to change the mortality rate and the prognosis of hypertension over a span of five years, we must be able to show an improvement on the results of treatment by surgical means.

As far as the different surgical technics are concerned, so much has been written about the different technics that it seems unnecessary to refer to them in detail. Suffice it to say that rhizotomy, extending from the sixth thoracic nerves to the second lumbar nerves, was carried out with the idea of interrupting sympathetic impulses to the splanchnic vessels and the vessels of the lower extremities. Physiologically this was sound, but the procedure also involved the motor components of the spinal nerves, a circumstance which only beclouded the picture. The operation proved to be of such magnitude and to be accompanied by so much risk, not only of death but of physical disability, that it was abandoned as being surgically hazardous. The rhizotomy operation was important owing to the fact that it proved that the physiologic interruption of the sympathetic impulses as they proceed from the spinal cord to the periphery influences the blood vessels.

This fact aroused the interest of the neurosurgeons in approaching the problem from an extraspinal route, and from this interest two procedures developed. Intrathoracic supradiaphragmatic resection of the tenth, eleventh, and twelfth thoracic sympathetic ganglia and the intervening trunk, along with the corresponding section of the splanchnic nerves, has been carried out in several large series, and the patients have been followed for a period of years. The subdiaphragmatic operation, consisting of removal of the splanchnic nerves, and the first and second lumbar sympathetic ganglia, with the intervening trunk, has been also carried out in a large series with results which show a definite advance in the surgical treatment of hypertension.

Under the impression that both the supradiaphragmatic and the subdiaphragmatic types of resection of the splanchnic nerves and sympathetic ganglia had their advantages and that more extensive denervation probably would be followed by greater response, the two procedures were combined into a transdiaphragmatic type of surgical procedure. This has been modified by several surgeons until now it has been accepted as one which may be applicable to a group of patients whose conditions would not respond as well as had been hoped for when other procedures were attempted.

As one scans the literature of the present day, one is impressed by the fact that probably the combination of the supradiaphragmatic and infradiaphragmatic procedures is being used

more extensively than any other type of operation. There is no question but what the combined operation carries with it a little higher mortality rate, but as time has progressed and as the different surgeons have realized the limitations of the operation in the advanced cases and in the older group of patients, the mortality rate has been definitely lowered.

The different types of operation for denervation of the so-called splanchnic vascular bed and the vessels of the lower extremities have been developed in the different clinics. Even as much as the entire sympathetic trunk, extending from the first thoracic to the fifth lumbar, has been removed in an effort to determine the exact amount of the sympathetic nervous system which it is necessary to remove to accomplish a physiologic result.

Cannon in his early experiments on the sympathetic nervous system demonstrated that in his laboratory animals a complete removal of the sympathetic nervous system was followed by some difficulty in adjusting to the difference in climatic conditions. In the patients who have had extensive sympathectomy, there have been some difficulties in adjusting to the differences in temperature and humidity in the different parts of the country. Just how important this is in the light of the effect on the blood pressure remains to be seen.

One is impressed in a review of recent literature with the fact that everyone who is doing this type of operation comes to the conclusion, after he has had sufficient experience, that the operation is physiologic and not pathologic, and that the response of the patient is in direct relation to the amount of the vascular bed involved, the extent of the involvement and the severity of the disease. Regardless of the extent of the operation, the age of the patient and the amount of irreversible tissue changes in heart, kidneys and vascular tree prove an insurmountable barrier. In considering this type of operation in the treatment of hypertension, it is of supreme importance to stress the physiologic nature of operations on the sympathetic nerves.

W. McK. C.

EARLY AMBULATION

Reports continue to appear in the literature attesting to the value of early postoperative ambulation. Two recent articles are of interest. Taylor (in the *Texas State Medical Journal* for October, 1947) advocates early ambulation following major gynecologic operations; he bases this conclusion on experience derived from 200 cases. Complications rarely appeared: there were no wound disruptions, hernias, nor major vascular complications. Gas pains were measurably reduced, and the postoperative temperature was one or two degrees lower than that observed in patients on extended bed rest. Hospitalization was cut in half, and the patients were stronger and happier.

In discussing this work Hawkins points out that he has observed similar good results with early postpartum ambulation in 800 of his patients. He noted that when the patient got out of bed soon after operation catheterizations were less frequent, involution of the uterus was earlier, fewer enemas were required, lochia was diminished, episiotomies healed normally, retroversions were no more common, thrombophlebitis and phlebitis were not observed, and the patient's morale was excellent. Hawkins wryly suggests that every obstetrician should be given a ten-day period of complete bed rest, in order that he may appreciate the relatively greater physical strain encountered in struggling with a bed pan, than in going quietly and slowly to the toilet.

Cole and his associates (*Annals of Surgery*, October, 1947) have made a detailed physiologic study of postoperative convalescence, in an effort to determine the needs of the postoperative patient. Various tests were employed by which proper diet and activity could be assayed. In general, better performance was obtained from those patients who had had high protein diets. Early ambulation exerted a favorable influence on the performance scores of practically all the tests that were employed.

The authors sagely caution, however, against the vigorous ambulation of patients for whom such activity is contraindicated. Obviously, some patients could be gravely injured by ambulation

programs that were not individualized. Until more physiologic data are available regarding the effects of ambulation, the physician would do well to proceed cautiously. The pendulum usually swings too far.

E. J.

SCIENTIFIC REPORTS

IN THE past decade there has been an ever increasing demand for information regarding scientific investigations and the results of these investigations that were elicited in many countries of the world during that time. The advent of war closed off circulation, distribution and exchange of ideas, and limited the full development of scientific fact and theory.

More recently, a tremendous increase in the number and variety of scientific journals has attempted to appease the great hunger for recent developments in scientific information. Among all the countries, America has taken the lead in reporting from her great number of laboratories. Nevertheless, the varied types of journals, the unknown locations of many laboratories, as well as their too-new publications, leave many investigators in this country, and many scientists outside America, ignorant of a great number of recent and important scientific papers and contributions.

To bring order out of chaos, a volume entitled "Scientific, Medical and Technical Books, 1930-1944" has been published in New York, edited by R. R. Hawkins of the New York Public Library. The book attempts to catalogue the old and new scientific publications, and has strong government encouragement.

Attempts are being made to maintain modern supplements to the original volume. The 1945-47 supplement will be issued if support from all publishing companies is forthcoming. Postgraduate Medicine feels the need for this method of clarifying an otherwise extremely difficult situation, resulting from the growth of a new war baby, and endorses its purpose.

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This Month in Medicine

SPLEEN EXTRACTS AND TUMORS

For eighteen years Watson has been studying the effect of spleen extracts upon tumor growth. This interest was stimulated by the fact that primary carcinoma of the spleen is almost unknown, nor can it be induced experimentally. When tumor tissue is implanted in the spleen, the tumor does not grow; and metastases into the spleen are very infrequent. The spleen, therefore, evidently contains some substance that inhibits tumor growth.

In 1929, Watson reported that spleen extracts favorably influenced lesions of Hodgkin's disease, but the effects on other malignant growths were not encouraging. This investigator now believes that with improved preparations and technics better results may be expected.

Three patients at Hahnemann Medical College and Hospital have been treated with the spleen extract over a period of twelve weeks. One has metastatic hypernephroma, and two other patients have metastatic bronchogenic carcinomas. Roentgenologic studies have revealed an inhibition of progress of the tumors. The general health of the patients is improved. Additional reports of this interesting work soon will be published.

SUGGESTED READING

Watson, G. F., *et al.*: Spleen extract and tumor growth. Science 106:348 (October 10) 1947.

ALOPECIA AREATA

The cause of alopecia areata is unknown. In many cases recovery is spontaneous, and occurs for no known reason. Any suggested treatment, therefore, is subject to obvious criticisms, particularly if the treatment is based on inadequate rationale.

Feeny has investigated the use of thorium-x in the treatment of alopecia areata. From a large series he selected 24 cases; all cases were excluded in which improvement might have been attributable to concurrent somatic or psychological treatment. He seems to have made a diligent effort to exclude all patients who would have given equivocal results in the investigation.

The thorium-x was applied in a varnish, at monthly intervals, for periods ranging up to a year. Of the 24 patients, 22 responded with satisfactory regrowths of hair. Three patients who were totally bald gave partial regrowths. Feeny believes thorium-x to be very effective in the treatment of alopecia areata. He recommends that treatments not be repeated on the same area more often than once a month.

SUGGESTED READING

Feeny, P. J.: Alopecia areata treated with thorium-x. Lancet 2:506 (October 4) 1947.

ALCOHOLISM

Although most people believe otherwise, the fact is that women drink less than they used to. Jellinek, of Yale, has made a thorough study of trends in liquor consumption between the years 1850 and 1945. Several interesting observations were made, of which the most striking was the finding that the rate of female alcoholism was higher in 1910 than in 1945.

During the past ninety-five years, consumption of hard liquor decreased 53 per cent, while beer consumption has increased 862 per cent. The number of chronic alcoholics was greatest in 1910, after which the number decreased steadily until the end of Prohibition. Since 1930 the rate has been rising, but it is still 31 per cent below that of 1910. The increase in liquor consumption during War II was caused by an increase of 35 per cent in the number of drinkers; the individual drinker consumed very little more than before.

The rise in the rate of female alcoholism has not been nearly as great as that of the male population. Thus, the female rate rose only 12.6 per cent between the last Prohibition years and 1945, while the male one rose 43.6 per cent. Further, the rise in the female rate occurred entirely during the war years. Jellinek concludes that not only do women drink less than they once did, but that such increase in drinking as there is has been caused largely by men.

SUGGESTED READING

JELLINEK, E. M.: Recent trends in alcoholism and in alcohol consumption. New Haven, Hillhouse Press, 1947. 4°.

METOPON

METOPON is a new drug, a morphine derivative, which has most of the advantages of morphine, with few of the disadvantages. It is practically without after effects of nausea and vomiting; it is nearly twice as effective in relief of pain; tolerance develops but slowly; little or no respiration depression and mental dullness are produced. It is effective when administered orally.

Metopon is unique in that it may be sold only for the relief of pain in cases of advanced cancer. It is administered in capsule form only, the usual dose being 2 or 3 capsules. Sharp and Dohme of Philadelphia, and Parke, Davis & Co., of Detroit are the manufacturers.

SUGGESTED READING

EDITORIAL: Metopon—new drug promises relief for cancer sufferers. Cancer News. Vol. 1, No. 10, p. 13 (October) 1947.

THE MEDICAL STUDENT AND TUBERCULOSIS

MORRIS, writing in the Journal of the American Medical Women's Association, deplores the lack of attention given to the health of the undergraduate and graduate medical student. Particularly does she point to the necessity for much better safeguards against spread of tuberculosis among these students. Certainly, at very vulnerable ages they are exposed to highly and unnecessarily infective environments.

Responsibility for these conditions and for their correction rests largely upon the medical school and hospital authorities. Morris suggests, as a minimum measure of protection, that every hospital and medical school should have a vigorous and well-organized tuberculosis control program, in which all personnel are routinely screened with x-ray, at the time they enter service and at appointed times thereafter.

SUGGESTED READING

MORRIS, S. I.: Safeguarding the undergraduate and graduate student of medicine against tuberculosis. J.A.M. Women's A. 2:395 (September) 1947.

LONGEVITY

CONTRARY to current opinion, physicians live as long as other people. Maybe the physician's life just *seems* longer. At age 25, the newly created physician or graduate can expect to live 43½ years. At 35, his life is half over; at 45 he has another quarter century. And if the Reaper hasn't cut him down before he reaches 65, he can look forward to another dozen years of life.

Diabetics are getting healthier and healthier, living longer and longer. Particularly is the increased life expectancy notable in diabetic children. In the pre-insulin era, a diabetic child of 10 had a 1.3 year life expectancy; now that child can expect to live 45 years. At age 30, the diabetic can now anticipate another 30.5 years of life; before insulin came, the expectancy was 4.1 years.

Insulin alone is not responsible for this increased longevity for diabetics. Chemotherapy has cut down the mortality caused by various associated and fatal infections. Further, surgery is now much safer for diabetics than ever before. Altogether, the lengthened span of the diabetic's life reflects the general improvement in practically all categories of American medicine and surgery.

SUGGESTED READING

EDITORIAL: Longevity of American physicians. Stat. Bull. Metropolitan Life Ins. Co. 28:1 (August) 1947.

EDITORIAL: Longer life for diabetics. *Ibid.* 28:5 (August) 1947.

FETAL MORTALITY AND SOCIAL CLASS

Social class is rather rigorously defined in England. The Register-General's social class I includes the professions, commissioned officers, and well-to-do people in general. Class III includes the skilled workers, and class V the unskilled workers; classes II and IV are composed of the intermediate groups, respectively.

In the past, various investigators have attempted to demonstrate differences in the stillbirth rates among the different social classes, but their efforts, in general, have been unproductive. Recently, Professor Dugald Baird, of Aberdeen, has succeeded in showing that the stillbirth rates are indeed significantly different in the "upper" and "lower" classes, and that these differences depend largely upon the quality of obstetric and prenatal care.

This investigator grouped his stillbirths into two social categories, the first including social classes I and II, the second including classes III, IV, and V. These two groups were further subdivided into those births that received the care of skilled obstetric specialists, and those that received routine hospital care. Significant differences then appeared between the two social categories, for among patients attended by skilled obstetric specialists, during their first pregnancies the stillbirth rate was 17 for classes I and II, and 37 for classes III, IV, and V. In second pregnancies, the rates were 8.6 and 20.3 respectively. The same social classes do not reveal significantly different data among patients treated by routine hospital care.

Professor Baird concludes, on the basis of these data and others, that the "reproductive performance" of social classes I and II is superior to that of others; other things being equal, the stillbirth rate of classes III, IV, and V is 2 to 3 times that of classes I and II. Similarly, neonatal mortality rates from all causes were found to be significantly greater in classes III, IV, and V.

In summary, the investigator points out that the stillbirth rate in Scotland could be reduced to less than one half the present figure.

SUGGESTED READING

Baird, Dugald: Social class and fetal mortality. Lancet 2:531 (October 11) 1947.

DDT AND THE TSETSE FLY

The tsetse fly has condemned large areas of South Africa, or has rendered agricultural pursuits in these areas hazardous or impossible. To date no effective means of wiping out this insect has been devised, but recent experiments with DDT are most promising.

A pilot test was made in Zululand, where the fly is a most important economic and public health problem. The DDT was sprayed from airplanes flying 50 feet above the ground. The planes could spray about 50 acres per minute, at a cost of approximately 18 s. per acre. The spraying resulted in a significant drop in the incidence of the tsetse flies in the areas sprayed. Although the flies were not eradicated, the numbers that survived were small.

Students of the problem believe that similar reductions in numbers, over a wide area, combined with the natural hazards involved in the fly's life cycle, should be sufficient to eradicate this pest.

SUGGESTED READING

Editorial: DDT and the aeroplane in the control of the tsetse fly and trypanosomiasis in South Africa. Nature 160:485 (October 11) 1947.

PYRIDOXINE IN RADIATION SICKNESS

Several investigators have reported good results in the treatment of radiation sickness with pyridoxine hyrochloride. Recently, Wells and Popp, of the Mayo Clinic, have investigated the value of this drug, administered intravenously to 200 patients who experienced nausea and vomiting during the course of roentgen treatment.

Best results were obtained when 100 to 200 mg. were given approximately a half hour before treatment. The larger doses were administered when the roentgen treatment was directed to the abdomen, thorax, or pelvis; smaller doses were given when the roentgen treatment was directed to the axilla, neck, or groin. These doses were sufficient to prevent or relieve promptly most cases of radiation sickness.

SUGGESTED READING

Wells, J. J., and Popp, W. C.: The use of pyridoxine hydrochloride in the treatment of radiation sickness. Proc. Staff Meet., Mayo Clin. 22:482 (October 15) 1947.

R. W. C.

Consultation Service

This special consultation information service is offered as a regular monthly feature of *Postgraduate Medicine*. Readers are invited to call on this Service for answers to difficult medical problems from members of our Editorial Board best qualified to help. Each question will be answered by mail and those of general interest will be published each month. Address all communications to Consultation Service, *Postgraduate Medicine*, 512 Essex Building, Minneapolis 2, Minnesota.

PHEOCHROMOCYTOMA

QUESTION: Any information as to further studies or suggestions helpful in diagnosing or treating the following case will be greatly appreciated.

The patient, male, 50 years of age, of Polish extraction, presented himself to me on June 3, 1946. He stated that in 1943 he developed heartburn after eating. He took "Tums" for two years for relief. After two years the heartburn ceased for two months. While stooping over to clean out his machine, he experienced an attack which felt like rocks in the pit of his stomach. This lasts for several minutes until he relaxes completely and then disappears. Taking soda gave relief for about a year. Every time he stoops down to work he gets "rocks in his stomach" and becomes white and shaky. Belladonna nembutal capsules with B complex capsules orally gave relief for ten days, but symptoms recurred.

Routine physical examination at this time disclosed a moderately well nourished, muscular white male of 50 years of age. Not acutely ill, but quite apprehensive about his condition. Blood pressure 128/80; pulse, respiration, and temperature normal. Tonsils: moderate size, no pus. Teeth: full plates. Thyroid: not enlarged. Heart: normal borders, tones and rhythm. Lungs: clear to P and A. Abdomen: scaphoid. Slightly tender right upper quadrant. No masses. No rigidity. No hernia. Genitals: normal. Prostate: normal size, slightly tender. Extremities: negative. Reflexes: slightly hyperactive. Urine: negative.

History by systems revealed no additional information of value.

June 4, 1946: Fluoroscopy of stomach and gastrointestinal series disclosed no abnormality of the upper gastrointestinal tract except a mild cardiospasm.

June 11, 1946: Gallbladder study with oral dye. Non-visualizing gallbladder.

June 12, 1946: Repeat gallbladder study with oral dye. Non-visualization of gallbladder.

The patient was then referred to a roentgenologist. His report of July 2, 1946, was as follows:

"The heart and lung fields are grossly normal fluoroscopically.

"The esophagus, stomach, duodenal cap, duodenum, and upper jejunum reveal no evidence of any intrinsic or extrinsic disease and are normal except for a mild gastritis with some antral spasm. At the stasis examination barium was in the ileum and no longer in the stomach—a normal distribution.

"Films taken after the oral ingestion of the dye reveal a dyefilled gallbladder of normal concentration and of normal size, shape, and position, containing no intraluminal defects. After the fatty meal the gallbladder contracts and changes size, shape, and position in a normal fashion.

"Conclusions: (1) Radiologically normal upper gastrointestinal tract except for mild gastritis with some antral spasm. (2) Roentgenographically normal functioning gallbladder containing no stones.

"Note: Judging from the patient's history, it is probable that he had one of two things. The first possibility is an acute cholecystitis at which time your x-rays revealed a non-functioning gallbladder which is usually the case. Ordinarily it takes one to two months following an acute attack before the gallbladder regains normal function.

"The other possibility is that he had a gastric ulcer which has responded well to your diet and now this man's stomach shows only a mild gastritis with some antral spasm."

Following this report the patient was treated symptomatically with an ulcer diet, belladonna and nembutal, and B Complex, with no improvement. Attacks became more frequent and severe.

January 3, 1947. X-ray gallbladder with oral dye. Normally filling and emptying gallbladder.

January 20, 1947. Gastrointestinal series. Entirely normal.

January 21, 1947. Barium enema. Large redundant transverse colon. Marked irritability under fluoroscopy. Given diet for spastic colon, belladonna nembutal, and Zymenol.

March 22, 1947. Seen again after three weeks' treatment by another physician. Under treatment for gastritis with no improvement. Now has dizzy spells on getting up. Almost faints. Blood pressure 174/100. Admitted to hospital for treatment. Given aminophylline, phenobarbital, lyo-BC and delvinal.

March 23, 1947. Blood pressure 132/86. Felt much improved. Only slight dizziness on turning head. Impression: Possibly on strychnine tonic from other doctor.

March 24, 1947. Blood pressure 134/86. Feels fine. Discharged from hospital.

April 17, 1947. Same complaints as before. No change

in condition. Advised to continue spastic colon diet, use Bulgarian milk, phenobarbital gr. t.i.d.

June 1, 1947. While in office developed an attack of "rocks in stomach." Nausea but no vomiting. Pains in small of back between shoulder blades. His blood pressure was immediately checked and found to be 224/120 and in a few minutes 236/136. Ten cc. aminophylline 3.75 gr. was given intravenously with relief of symptoms. Blood pressure 180/90. Patient was told that he undoubtedly had a chromaffin cell tumor but there was no evidence to indicate its location. Given Rx glucophyllin nembutal tablets ii t.i.d. and nitroglycerine "H" tablets gr. 1/100 to insert under tongue when attacks occurred. Advised to throw away diets and eat as he pleased. Under this therapy attacks were confined to a minimum. He gained weight and felt much better, but attacks would occur with such frequency that some days he would take as many as 15 nitroglycerine pills.

June 11, 1947. Electrocardiogram normal.

July 7, 1947. While on vacation in San Diego he was seen by another physician, who diagnosed his case as angina pectoris.

July 15, 1947. Patient presented San Diego's doctor's diagnosis. I had just returned from vacation and had chanced on an article on pheochromocytoma, which I was convinced this patient had.

July 25, 1947. An intravenous histamine test was run.

Minutes	
0	134/90
13	154/92
15	154/90
25	134/88
26	0.5 mg. histamine I.V.
2	132/88, severe headache, moaning, restless.
4	210/124, perspiring
8	210/118
10	Nausea and vomiting
11	204/116
13	188/108, headache decreasing in intensity.
15	186/104
19	172/100
22	162/86
23	Aminophylline 0.25 gm. I.V.
25	146/84
26	154/88, feeling all right, test discontinued.

July 26, 1947. Intravenous pyelograms taken. No defect seen in either kidney.

Films sent to roentgenologist whose diagnosis follows: "Normal pyelogram—suggestive of vague mass overlying upper pole of right kidney in the region of the adrenal gland. From an x-ray standpoint, a positive diagnosis of a chromaffin tumor of the right adrenal cannot be made."

Referred to Dr. H. with following reply:

"Your patient was seen today. Certainly his history is consistent with the possibility of a pheochromocytoma. Dr. S. and I both reviewed his intravenous urograms and neither of us felt that further information would be gained by making additional pyelograms.

"Personally, I would say that neither kidney was in a position which could be considered abnormal.

"The last patient of whom I had personal knowledge who had a pheochromocytoma (diagnosis made at autopsy), had a tumor less than one inch in diameter. It is my impression that it is the exceptional tumor which can be clearly demonstrated by radiography. The most definitive x-ray studies are made by air injections of perirenal space. However, this study runs a risk roughly comparable to surgical exploration, and I never do it."

What further diagnostic studies can be made to localize this man's trouble? Is an exploratory laparotomy justified? M.D.—Washington

ANSWER: It would certainly appear, on the basis of the evidence submitted, that this patient has a pheochromocytoma. In many cases, however, the results of the histamine test are not complete, according to certain standards. That is, some investigators believe it is desirable to determine the response of the blood pressure after immersion of the patient's hand in cold water, and to compare this increase with the increase that occurs after the injection of histamine.

Localization of such a tumor often is a very difficult problem. It would seem that the perirenal insufflation of air is attended by a risk that is very great; a risk which appears to be as great as that of surgical exploration.

The type of surgical exploration to be carried out for patients with such a tumor varies according to the preferences of individual surgeons. Some employ the unilateral kidney incision, and if the tumor is not found through this incision, surgical exploration of the region of the opposite kidney is carried out, either at the same time the first incision is made or at a later date. Other surgeons prefer the transverse abdominal incision, in which case both adrenal regions are explored surgically at the same time.

Association Notes

GRAHAM NAMED PRESIDENT-ELECT AT ST. LOUIS ASSEMBLY

Named as president-elect of the Interstate Postgraduate Association for 1947-48 was Dr. Evarts A. Graham, professor of surgery at Washington University Medical School. Dr. Graham will assume office at the 1948 Assembly in Cleveland, scheduled for November 9 to 12, inclusive.

Dr. Herman L. Kretschmer, professor of urology at the University of Illinois Medical School, was formally installed as president of the Association at the St. Louis Assembly dinner meeting, October 16 at the Jefferson Hotel. Dr. Kretschmer succeeds Dr. James E. Paullin, professor of clinical medicine at Emory University Medical School.

Other officers of the Association are Dr. John F. Erdmann, New York, and Dr. Frank H. Lahey, Boston, presidents of clinics; Dr. Arthur G. Sullivan, Madison, Wis., managing director; Dr. Tom B. Throckmorton, Des Moines, Iowa, secretary; Dr. Harry G. Langworthy, Dubuque, Iowa, treasurer and director of the Foundation Fund, and Dr. Mather Pfeiffenberger, Alton, Illinois, speaker of the assembly.

IPMA PRESIDENT CALLS FOR "MEDICAL CITIZENSHIP"

The text of the address given at the Assembly dinner, October 16 in St. Louis by Dr. James E. Paullin, retiring president of the Interstate Postgraduate Medical Association, is printed in full. Dr. Paullin spoke on the subject:

MEDICAL CITIZENSHIP

"If ever the human race is raised to its highest practical level intellectually, morally, and physically, the Science of Medicine will perform that service"—Descartes.

The older writers and philosophers placed responsibility on those who practice the healing arts for their part in the proper functioning of a community or government. Plato, Socrates, Hippocrates, and many, many others indicated the role which the philosophy and training of the physician can exercise in making the world a better and a more desirable place in which to dwell.

At this particular time in world history, it is especially fitting that we examine the meaning and obligations of citizenship: what can we, as a profession, do towards guiding and directing the present trends into effective paths for improvement?

Never before in the history of the world has there been so much restlessness, uncertainty, distrust, intolerance, bigotry, selfishness and lack of respect for law and order as there is today. Our newspapers feature and our radios constantly blast minute descriptions of murders, gangster stories, corruption of public officials, wastage of life, squandering of money, strikes, sabotage, disregard of law, as well as dissension and distrust among nations. Innumerable investigations are reported by various committees both local and national, of delinquency and corruption. The conclusions of the investigators are seldom widely published. Certainly, insofar as my limited knowledge goes, there is little or no evidence of any immediately beneficial results or remedies resulting from such investigations.

The problem is not local but prevails from the smallest communities to the highest, most honored and respected law-making bodies in our nation. How can we as citizens maintain confidence and respect for our highest legislative and protective body—the United States Congress—for their decisions and laws when we read of the conviction of one of its members by a United States Court for malfeasance in office and criticism of others for violation of public trust and of un-American activities?

When we, as self-respecting American citizens, witness such exhibitions of infantilism and political chicanery as were recently staged before a sub-committee of the United States Senate in their *supposed* investigation of wastage of the people's money in airplane construction, how can we consider this body qualified to make suitable laws for us? What kind of citizens are we and what kind of citizenship do we believe in after an insolent individual tells the President and the one hundred and forty million inhabitants of these United States what he will or

will not do irrespective of the effect of his actions on the health and welfare of all our people? Is this the type of citizenship planned for us by our forefathers? Have we completely lost sight of all of our individual and collective obligations to serve our country and our people as good citizens? These questions need to be answered and need to be answered now.

We have just passed through one of the most destructive and devastating experiences the world has ever known. World War II destroyed more lives, caused more crippling, blindness, deformity, injuries, mental and moral decadence than any catastrophe in any civilization. Our Army, our Navy, and civilians fought for the establishment of the Four Freedoms. We fought for an enduring peace. We were told "This was the war to end all wars." What has been accomplished since the last shot was fired?

Are we today any nearer the objectives for which we fought? Are we, as American citizens, any freer than we were of unnecessary government controls? What is our status as individuals? Are we enjoying the rights and liberties of democracy as advocated by Thomas Jefferson, or are we being more and more regimented and our liberties and rights more and more curtailed under the allegedly beneficent influence of a paternalistic government? Where in this maelstrom of discontent and distrust are the prerogatives of States' Rights that our forefathers valued so highly? Have these disappeared almost completely under the same crushing influence of centralized governmental control? What has happened to the individual? Has he forfeited his independence, his freedom, his initiative, his individuality, to become a spoon-fed, petted, pampered, spoiled brat, who hasn't sufficient intestinal fortitude to demand his independence and the right which he has to assume the responsibility of *real* citizenship?

With conditions as they are and with trends pointing towards anything but peace, isn't it time that we should urge all to take stock of our physical, educational, moral, mental, philosophical, and religious assets and see just how well we are prepared to meet the demands which are arising in the American way of life? The correct interpretation and solution of these problems will determine whether we will continue to exist as a free people or whether we be wiped from the face of the earth. Can we not face this responsibility and aid with its solution as citizens and as physicians, using in the latter capacity, the philosophy that has motivated us, as doctors, in our efforts throughout the ages to go about doing good?

Throughout the entire world, the medical profession, with its vast achievements in the scientific development of new methods and means of saving life, has been preventing disease, rehabilitating the injured, cultivating better mental and spiritual health, striving and struggling for the abolition of hate, jealousy and fear, constantly teaching people to respect and honor human life and to live with decency, morality, and decorum, to be kindly and considerate, and to utilize all human facilities in an effort to overcome man's inhumanity to man. Isn't it strange that this profession should be the first called upon to make ready in case of war and to minister to those who are the victims of the forces that we constantly strive to overcome? Although medicine is a universal profession, it has been and is practiced by a select few in every country of the world and among all peoples. The fundamental and important philosophy of the true man of medicine is the same wherever he is. His philosophy is well stated in the Hippocratic Oath; it is the philosophy of the Good Samaritan and of the Sermon on the Mount. What could be more helpful today than a desire of our citizens to live this philosophy with us?

Modern trends of living have forced our civilization to go at such a rapid pace that there is scarcely any time left for the evaluation or the contemplation of the results of the many social experiments. The various professions—medicine, engineering, legal, business, labor, and others—are so busy with their own selfish problems, narrowing their activities and their horizons to such an extent that they fail to comprehend other duties and obligations which rest upon them as citizens. These professional workers are neglectful of the interests of the community and the state in which they live. Scientific achievement has been the watchword. All professions have been so geared to achieve material success and the field of education has been so narrowed that now our institutions are preparing students for various specialties rather than devoting their attention to the broadening principles which prepare people for the enjoyment of life and good citizenship.

In medicine just now, great stress is placed upon scientific achievement, medical research, and experimental medicine. Students, pre-medical and medical, scarcely have time for anything other than the study of certain fundamental subjects such as physics, chemistry, and biology, as well as the medical sciences. In our modern concept of educational methods it apparently is not considered essential that one should become sufficiently well acquainted with the English language to be able to spell, write, or use its components correctly. There is no place in the usual pre-medical curriculum for the study of literature, art, music, philosophy, or the humanities. These subjects are discarded because they are not useful in a scientific and mechanistic age. As a result the tendency has developed for the profession to withdraw into the seclusion of its own sanctum; its philosophy and knowledge are not used for the greatest possible advantage of the community as a whole.

We have, from training, an obligation to participate in the basic problems governing man's relation to man. We must not allow the complete formula for this relationship to be engineered, molded, and activated by those with a desire but without sufficient knowledge or experience to write the formula for such a relationship. Neither medicine, nor any other profession, can alone solve this problem; there is required a cooperative, integrated understanding knowledge from all groups.

Modern medical education while teaching and learning a great deal about disease, its manifestations, its pathology, its prevention, and its treatment, is inclined to neglect the study of the person who has the disease. Frequently, more is accomplished by treating the person rather than the disease the person has.

With the development of scientific skills and propensities in medicine, specialization has increased to such an extent that there is a significant decrease in the number of general practitioners or family doctors. This type of practitioner of medicine is a good *medical citizen*. He is the one who helps to guide the affairs of the family and of the community along safe and sane lines. He knows the individuals and how to treat them. He knows the community and how to treat it. He is the man of medicine who sets an example of citizenship for us to follow. He not only is a doctor, whom all admire, but equally a priest who because of his religion and philosophy guides his patients to healthier ways of living and thinking. He it is who visits the homes of the very poor and of the very rich. He comes in contact with all family life irrespective of race, color, creed, or religion. He is cognizant of the problems entering

into the home life of his patients. He knows the effects of poverty, malnutrition, ignorance, indifference, jealousy, frustrations, disappointments, maladjustments that exist in our society. In his capacity as a family doctor and advisor he can help socially, mentally, and religiously in solving many of these difficulties. He can and does help elevate the family because it is known that poor and inadequate family life is not conducive on the part of parent or child for the essentials of good citizenship.

Do not get the impression that I am opposed to specialization. Specialists have added greatly to the improvement and advancement of medicine and through their efforts have made recently acquired knowledge for the diagnosis and prevention of disease more easily available to the general practitioner. I believe that every specialist should have two or more years of general medical training before beginning study for a specialty.

This brings us to a consideration of what the physician as a citizen and in his professional capacity can do to help better the living in his community and to improve conditions.

First, he should teach that the fundamental principle upon which all society is founded, and on which it exists as a civilized community, is a respect for law and law enforcement; that laws must be made for the common good of *all* of the people and not for the purpose of promoting self-interest or the establishment of a bureaucratic control which destroys individual freedom of those governed. Training such as this must begin in the home. A conference report of the First National Conference on Citizenship says that "The home and family life are the very foundation of effective American citizenship."

"It is in the home that spiritual values and attitudes are learned. Here, through participation in the joys and problems of living together are learned the lessons of cooperation, fair play, give and take, and appreciation of the common everyday things of life. Here it is that the individual finds emotional security and self-expression and at the same time learns to respect the opinions of others and their rights and self-expression. Here is established character, faith, honor, self-respect, loyalty, pride, sense of duty, respect for law and order and the property rights of others." If the physician in his daily contact with his patients could but inculcate this into our modern methods of living and into our modern civilization, what a tremendous difference there would be in the attitude which the present generation of children manifest in their behavior and their relationship to others. In every home there is an opportunity for the physician to examine and discover these deficiencies and to add suggestions for their improvement.

Second, in the field of education a great deal, according to my judgment, is being lost through the neglect or the indifference with which certain subjects are taught: for example, history. It is my belief that no one, and especially physicians, can be truly educated for citizenship who is not well informed on great world events. I do not mean to imply that every man must be a historian; however, he should be acquainted with the great epochs of world history and should know something of the economic, social, and religious trends resulting from the various crusades. This type of education is an individual achievement and can't be handed down from generation to generation. Such broadening of the educational level along this and other lines would awaken in the governed an interest in the government, and would lead to a broader interest in humanities, and eventually to a better method of living. If the modern youth is educated along these lines, he should be prepared to assume the responsibilities of citizenship as they evolve in his daily life.

Third, community responsibilities. Every physician owes the community in which he lives the responsibility of guidance, not only in the ordinary needs of citizenship but in that type which requires the best thinking and planning to deal with problems of public health, mental health, social health, and religious health or philosophy. The physician should try by precept and example to interest his community in the ideology of the medical profession. Let the people know the satisfaction and happiness which comes into the life of everyone who goes about doing good. As Sir Thomas Brown once wrote to his son, "Times look troublesome but you have an honest and peaceable profession which may employ you and discretion to guide your words and actions."

Since a physician is one who is well trained in the art of healing and one who is authorized to treat disease, and one who heals moral or spiritual diseases or infirmities or the like, then he must assume as part of his calling the obligation of medical citizenship. Voltaire said "But nothing is more estimable than a physician who having studied nature from his youth, knows the properties of the human body, the diseases which assail it, the remedies which would benefit it, exercises his art with caution and pays equal attention to rich and poor."

We are physicians—we must also be teachers because the word doctor means teacher, a learned man, and since we are learned we must teach others human values. This implies that we must take our place in the community as advisors on all problems relating to human welfare. We must exercise that right of citizenship to assist in protecting people from those forces which in our political life would rob them of their individuality, of their independence, of their initiative. At the same time we must strive to eliminate governmental control through bureaucracy of their every activity and of their American way of life. In discussing their hopes, their fears, and their failures, we should guide them to a more successful way of living and to a happier understanding of existing problems.

Let us therefore combine our scientific knowledge with human understanding and wisdom. With the philosophy that motivates the lives of each of us, we, as medical citizens, may become more efficient guides, philosophers, and friends, to all of our people, in sickness and in health. We may give our resources to establish for them a better and saner method of living. We may aid to eliminate strife, confusion, disrespect for law and religion, such as prevail in the world today. We may hope that everyone will voluntarily seek and practice the teachings of "The Sermon on the Mount." Thus and only thus may we return to the democracy of our fathers and achieve *Peace, Happiness* and *Contentment.*

DOCTORS
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St. Louis Assembly

October 14-17, 1947

32nd Year

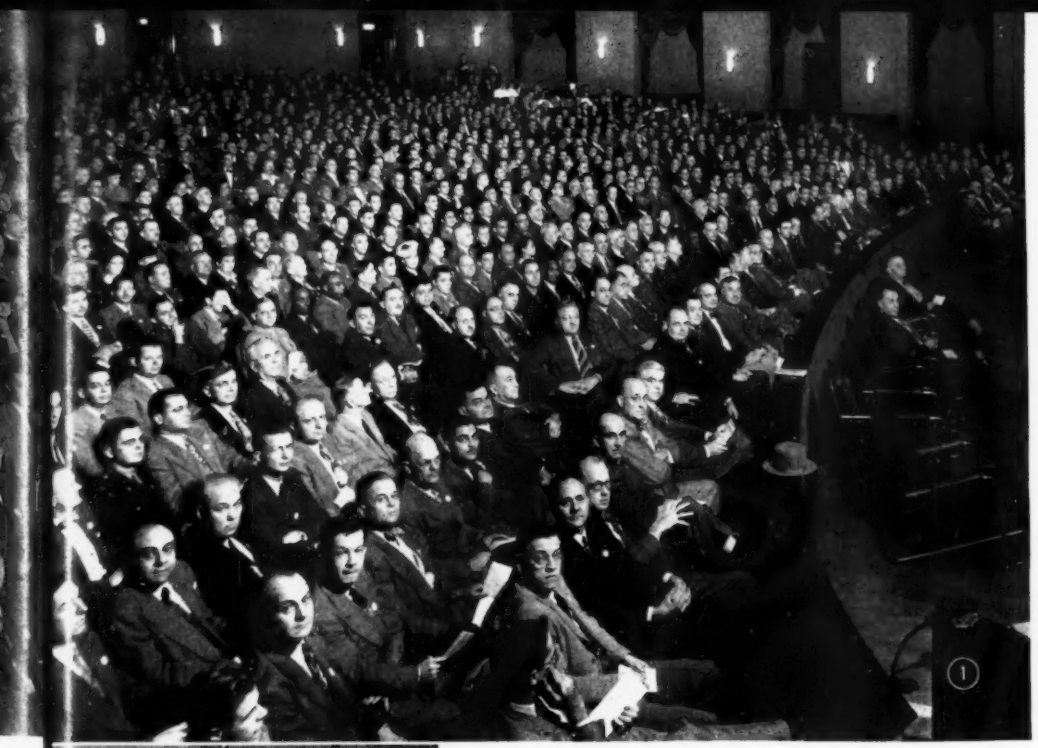

Figure 1. General view of the audience at one of the sessions in the St. Louis Auditorium.

Figure 2. Registration desk and entrance to the meeting and exhibit halls.

Figures 3-7 and 9. Members and visitors found much of educational and practical value in the technical exhibits.

Figure 8. Important to the success of every Assembly are Mrs. Constance Packard, official reporter and Dr. Mather Pfeiffenberger, speaker of the Assembly (the two central figures in the picture).

New Drugs

POLYTHIONATE LOTION

PURPOSE: Effective agent in the treatment of different forms of acne.

COMPOSITION: 1.5 per cent sulfur in the form of a stable solution of the polythionates of sodium, with zinc oxide, suspended in distilled water.

DESCRIPTION: A smooth, velvety-like lotion, free from the objectionable odors that are associated with the use of most preparations of sulfur. It has a refreshing aroma (not perfume-like) and a distinctive flesh color.

INDICATIONS FOR USE: In acne, where diminution in the activity of the sebaceous glands is desired, plus an astringent effect, and in certain cases, mild desquamation.

DOSAGE AND ADMINISTRATION: The lotion is applied diffusely to the affected parts after they have been thoroughly washed.

HOW SUPPLIED: 2 oz. and 4 oz. bottles only.

PRODUCER: Upsher Smith Company, Minneapolis, Minn.

RUTORBIN

PURPOSE: A new therapeutic combination for the prevention and treatment of hemorrhage due to increased fragility or abnormal permeability of capillaries.

DESCRIPTION: Available as compressed tablets in two potencies, containing rutin and ascorbic acid in the ratios of 20 to 100 mg., or 60 to 300 mg.

INDICATIONS FOR USE: For strengthening and normalizing capillary walls that have been weakened by rutin need and ascorbic acid deficiency. It is also useful in diabetic retinitis, purpura, and idiosyncrasy to thiocyanate and arsenicals.

DOSAGE: 1 tablet Rutorbin 20/100, three times daily, by mouth. In refractory cases several times this dosage may be indicated. Dosage should be increased until the Göthlin test for the Petechical Index becomes normal, and should then be maintained to prevent relapse.

HOW SUPPLIED: Rutorbin Tablets 20/100 (20 mg. rutin; 100 mg. ascorbic acid). Bottles of 100. Rutorbin Tablets 60/300 (60 mg. rutin; 300 mg. ascorbic acid). Bottles of 50.

PRODUCER: E. R. Squibb & Sons, New York, N. Y.

ETHINYL ESTRADIOL

PURPOSE: Estrogen therapy.

DESCRIPTION: Tablets containing 0.02 and 0.05 mg. of ethinyl estradiol.

INDICATIONS FOR USE: In the treatment of female hypogonadism, menopausal syndrome, senile vaginitis, kraurosis and pruritis vulvae, functional uterine bleeding, breast engorgement, and for the symptomatic relief of prostatic carcinoma.

DOSAGE AND ADMINISTRATION: Orally. Suggested dosage: menopausal syndrome 0.05 mg. daily; suppression of lactation 1.5-2.5 mg. daily for three days; functional bleeding 0.3 mg. daily for 20 days with 5.0 mg. progesterone (Lutocylin) intramuscularly daily, 16th-20th day; hypogonadism 0.05-0.5 mg. daily; prostatic carcinoma 0.25-0.5 mg. daily.

CAUTIONS: Many clinicians believe estrogens are contraindicated in women who have a familial or personal history of mammary or genital malignancy.

HOW SUPPLIED: Tablets of 0.02 and 0.05 mg. in bottles of 100 and 250.

PRODUCER: Ciba Pharmaceutical Products, Inc., Summit, N. J.

PROCARDIUM

PURPOSE: A new cardiac and vasomotor stimulant.

COMPOSITION: Digitoxin 0.05 mg., Strophanthin-k 0.05 mg. and Strychnine Sulphate 0.10 mg., in enteric coated tablets.

DESCRIPTION: In action the digitalization provided by digitoxin is supplemented by strophanthin which provides similar therapeutic effects, acting promptly whereas digitoxin produces a prolonged effect. The strychnine acts upon the central nervous system, tending to stimulate the respiratory and vasomotor apparatus. Procardium offers the additional advantage of being practically free from locally induced vomiting and nausea.

INDICATIONS FOR USE: For therapy or prophylaxis in cardiovascular cases requiring heart and vasomotor stimulation; for such conditions as heart failure, myocardial insufficiency, senile myocarditis, chronic passive congestion and weakness of heart musculature.

PRODUCER: Grant Chemical Co., Inc., New York, N. Y.

SYRUP SEDULON

PURPOSE: Recommended for severe cough, particularly for night cough.
COMPOSITION: Syrup Sedulon contains a new drug developed in the Roche Research Laboratories—Sedulon—which has a mild sedative action.
DESCRIPTION: Can often be used in place of codeine because of its effectiveness, thus avoiding the use of narcotics. Non-narcotic, pleasant-tasting.
HOW SUPPLIED: In 4 oz. and 1 pt. bottles.
PRODUCER: Hoffman-La Roche, Inc., Nutley, N. J.

I. V. SET

PURPOSE: Reduction of danger from pyrogen reaction.
DESCRIPTION: The set, which is thrown away after a single use, will also save the time now spent in preparing, cleaning and sterilizing regular hospital I. V. sets. The set contains an all glass dripmeter which may be inserted directly into the Cutter Santiflask. Forty inches of pure latex tubing, measuring $\frac{1}{8}$ by $1/32$ inches in diameter, connect the dripmeter to the ground glass needle adaptor.
HOW SUPPLIED: Available in boxes of 48.
PRODUCER: Cutter Laboratories, Berkeley 1, Calif.

PERABETA CAPSULES

PURPOSE: For the prophylaxis and treatment of frank and subclinical deficiencies of vitamins B and C.
COMPOSITION: Each Perabeta capsule contains thiamine hydrochloride (vitamin B_1), 3 mg.; riboflavin (vitamin B_2), 3 mg.; pyridoxine hydrochloride (vitamin B_6), 0.1 mg.; niacinamide, 20 mg.; calcium pantothenate, 3 mg.; other natural factors of the B complex from 84 mg. of dried liver, including traces of biotin, folic acid, and inositol; ascorbic acid (vitamin C), 50 mg.
INDICATIONS FOR USE: Effective in treatment of beriberi, pellagra, and ascorbic acid deficiency states. Also in supportive treatment during pregnancy and lactation, surgery, febrile states, diarrhea, and diuresis.
DOSAGE: Suggested dose for adults and children (6 to 12 years of age) is one capsule per day. The therapeutic dose is evolved in multiples of the prophylactic dose in accordance with individual requirements as determined by the physician.
HOW SUPPLIED: In bottles of 100 and 500 capsules.
PRODUCER: Sharp & Dohme, Inc., Philadelphia, Pa.

ACIBAN

PURPOSE: Antacid for the prolonged treatment of peptic ulcers.
COMPOSITION: About 80 per cent of the antacid consists of casein, which is digestible and of nutritional value, while the remaining calcium ions decrease the permeability of the blood vessels.
DESCRIPTION: A new pleasant tasting antacid in tablet form which may be easily chewed.
INDICATIONS FOR USE: In neutralizing the stomach contents of peptic ulcer sufferers.
DOSAGE: Aciban tablets are nontoxic and can be taken in large quantities without any serious reaction.
HOW SUPPLIED: Packages of 50 and 250 tablets.
PRODUCER: Lederle Laboratories, Pearl River, N. Y.

LYNORAL ELIXIR

PURPOSE: Estrogen therapy.
COMPOSITION: Each teaspoonful of Lynoral Elixir contains 0.03 mg. of ethinyl estradiol.
DESCRIPTION: Taste, aroma, and appearance of a fine peach cordial. Permits convenient adjustment of dosage to the requirements of the individual patient.
INDICATIONS FOR USE: May be administered in hypoovarianism, infantilism, menstrual disturbances amenable to estrogen therapy, and the symptomatic treatment of prostatic cancer.
DOSAGE: In most menopausal cases, treatment is begun with 1 teaspoonful of Lynoral Elixir twice a day; in severe cases, should this dosage be insufficient, it may be increased under the physician's supervision to 3 to 5 teaspoonfuls a day. For maintenance therapy, 1 teaspoonful a day usually suffices.
HOW SUPPLIED: In bottles of 4 oz. and 1 pint.
PRODUCER: Roche-Organon, Inc., Nutley, N. J.

BREOGAMINE

PURPOSE: A protein powder for oral use in supplementing the dietary source of protein.
COMPOSITION: Derived by special process from lactalbumin.
DESCRIPTION: 5 gm. of Breogamine equal 4 gm. of protein, facilitating dosage calculation. Lack of taste allows the addition of flavoring preferred by the patient.
INDICATIONS FOR USE: May be used as the sole source of protein in the diet.
HOW SUPPLIED: In ½ lb., 1 lb., 5 lb., and 25 lb. containers.
PRODUCER: George A. Breon & Co., Kansas City, Mo.

AFTER HOURS

By FRANK G. SLAUGHTER, M. D.

WE'RE starting a movement to put some zip in medical clinical records and we want every redblooded hemedico (and she-medico, too) among our readers to get behind us and help put it over. Of course this is only a part of the activities of our parent world organization, "The Society for Prevention of Cruelty to Record Librarians!"

Think of the poor librarian who has to read the stuff that goes into the average hospital chart. How frustrated she must get from poring over the same old clichés day after day. What a beating her husband takes at night as she lies, sleepless, a quivering bundle of nerves, dreading the day when she must once again pick up a chart and read, "Family History Negative."

Medicine has made great progress along most lines. We've practically done away with pneumonia, scarlet fever, diphtheria, typhoid — the list could go on and on. But what improvement have we made in the language of clinical records? None. The same old hackneyed phrases, the same old clichés. No wonder the average hospital has so much trouble getting records written at all when convention doesn't allow any assertion of individuality, any freedom of expression. Comes the revolution, things are going to be different. Join the SPCRL today!

WE'LL start with the family history. Maybe they aren't as bad as "Family History Negative," but is *Patient is youngest of three children* much better? In the New Order we'll add a little Hearstian touch and get something like this: *Patient denies that she is the oldest of three illegitimate children.* Now we've really got something that will bring a glow to the eyes of the poor record librarian, or to whoever reads these time-yellowed pages long after we are gone . . .

Or a bald phrase like *Mother had diabetes.* Does that really tell us anything about mother? How did she first learn she had diabetes? Did the bees really follow her to the back of the barn? . . .

Or perhaps we're investigating mental illness. The intern of today would write: *Father spent ten years in a mental institution.* Depressing thought, eh? Not when we go deeper and find out who father thought he was. Was it Napoleon? Think of the fine time he had with Josephine. Or maybe he was Adam. How he must have felt when he made the greatest discovery of all time. Not a bad way to spend your declining years, is it?

Actually, what we're pleading for is not so much a different way of expression, as more freedom of thought and more individuality. We're against the regimentation of modern medical language, which is actually as restricted as anything in Joe Stalin's homeland of the Veto. We know it will take courage to break out of the mold, but break we must.

TAKE the description of the Present Illness for example. Nine out of ten times it goes something like this: *Patient suddenly found that she couldn't bend her arm.* Does that tell us anything we want to know? No. We must say: *Now Madam, the psychosomaniacs tell us that every human ill is based on Sex. What were you* really *doing when this trouble began?* Nine times out of ten, she'll break down and admit the interesting truth. What a titillation our librarian is going to get out of this one. But we'll be saving ourselves a lot of trouble, too, for with that history a psychoanalyst could make the diagnosis without rising from his couch.

In the Past History, the New Approach will really bring results. Take "Habits." What do we usually see? *Smokes a pack a day.* (Reefers? Bet you didn't even ask.) Or, *takes highball before dinner occasionally, likes a few drinks in the evening.* Will we let it go at that? Certainly not. The interesting part comes after the highball before dinner and the couple or so drinks afterwards. What does this gal do after she's had three or four? (Personally, we take Sal Hepatica, we've that kind of insides.) Are her habits as good after that? Intriguing thought. Maybe we'll just change that "Habit" column entirely now and put in the pungent word, *Bad.* Now our record librarian is happy. Just what were those bad habits? The next thing she's trying three or four drinks herself and . . . Presto! She isn't frustrated anymore. A great victory for the SPCRL.

Where we really need a change, though, is in recording the physical examination. This hasn't changed since Hippocrates and Galen. Dig up an old tablet in a temple of Esculapius, scratch one from the wall of a pyramid, or just pull out a modern hospital chart, and what do you see: *A well developed and well nourished female lying quietly in bed.* What a way to describe God's noblest creation! Does it tell you anything worthwhile? Do you get a picture of this WDAWNF as she lies quietly in bed? Is she always quiet in bed? (Maybe we shouldn't ask that.) Not a word about the really important thing, just AWDAWNFLQIB.

DON'T get us wrong. We haven't anything against *Well developed, well nourished females lying quietly in bed.* In fact we'd like to see more of 'em. We'd like to see them become a national institution, with one in every home, in every bed, in *our* home, in *our* bed. See what freedom of thought the New Concept gives you? We're on their side, or would like to be. . . .

But let's put it a little more flatteringly, maybe something like: *Patient is a statuesque blond under a sheet with blue eyes and hair only slightly black at the roots. She smiles and shows one gold tooth.* See the difference? Now you're interested, you want to know more. Does the sheet really have blue eyes? Who kicked out that tooth? What is under the sheet? We read on, not even noticing that the guy who did the examination missed the head and neck. We'd have been in just as much of a hurry to get under that sheet as he was.